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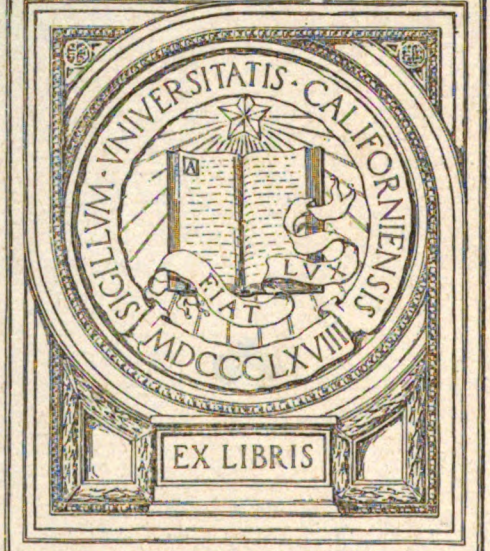

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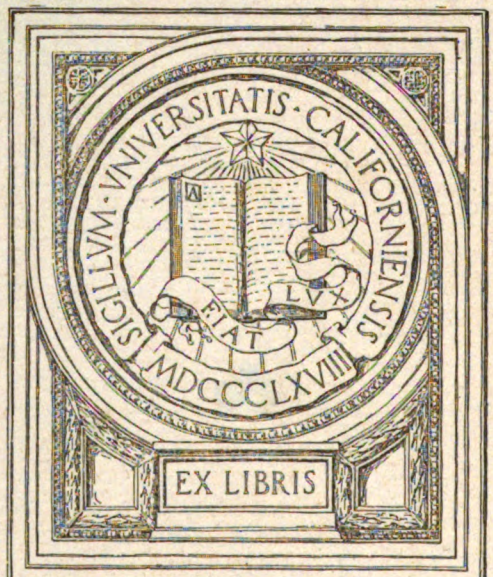

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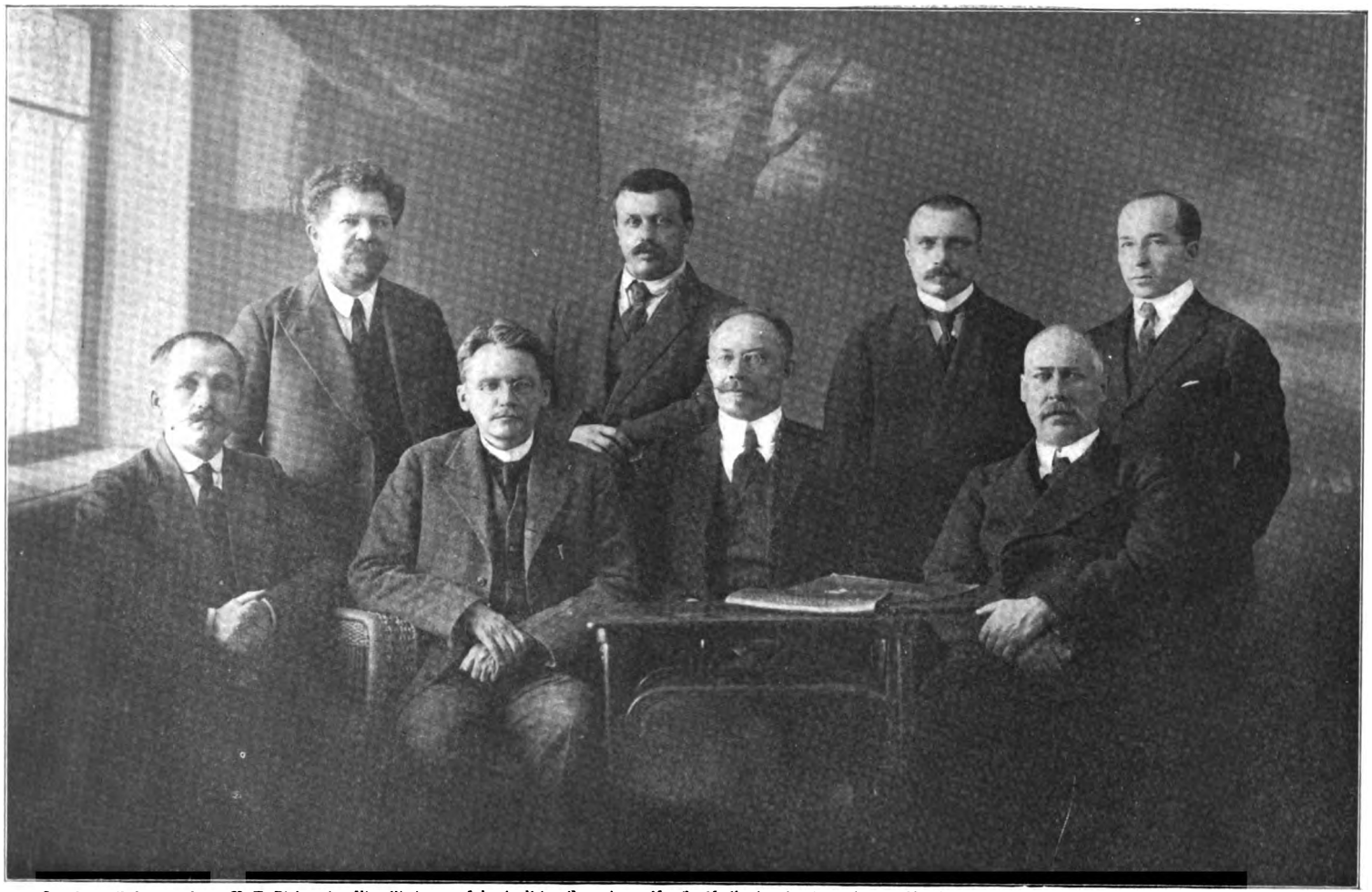

Standing (left to right): K. T. Pichougin, Vice-Chairman of the Auditing Committee; Mr. S. M. Kochergin, Agriculturist, Member of the Board in charge of the Dairy Dept.; Mr. J. V. Maioroff, Vice President of the Union; Mr. V. S. Kolesnikoff, Assistant Manager of the Union's Office in New York.

Sitting (left to right): Mr. J. C. Basoff, Chairman of the Auditing Committee; Mr. J. K. Okulitch, Grad. Agr. Eng., General Manager for abroad; Mr. A. A. Balakshin, President of the Union; Mr. W. J. Iliatchenko, Vice President of the Union.

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"UNION OF THE SIBERIAN CREAMERY and OTHER CO-OPERATIVE ASSOCIATIONS" and THE COUNTRY SERVED BY THIS ORGANIZATION

Compiled by the Section of Economical Statistics of the
Board of the Union of the Siberian Creamery
Associations, May 1919, Omsk, Siberia

BOSTON, MASS., U. S. A.
1919

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Translated from Russian by
ALEXANDER LOGOFET

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PREFACE

The World War has wrought great changes in the mutual relations of nations. Old economic ties are broken; new political attractions have been created; new paths are dimly seen in the spheres of trade, finance, and human intercourse generally.

After the terrible storm and thunder, nations have awakened to a new life which must be built upon a better and firmer foundation. To accomplish this they must know of the conditions of life in different countries and also about the great economic organizations of other nations.

Regenerated Siberia, which more than a year ago threw off the terrible yoke of Bolshevism, is endeavouring to establish commercial relations with those industrial nations which promise her the possibility of an active exchange of merchandise.

The oldest and greatest purely peasant organization in Siberia,—The Union of the Siberian Creamery and other Co-operative Associations—which has been working for over ten years in the market of Great Britain, has now greatly extended its activities, and has decided to publish this book to acquaint the interested business people of the United States, Canada, and England with Western Siberia, and to supply a short description of the people's co-operative organization.

The Union of the Siberian Creamery Associations has bravely shouldered the difficulties of stormy times, and now, making strides toward a better future for the people of Siberia, it is anxious to promote strong ties between the rural inhabitants of Siberia and the financial and industrial circles of America and England.

We shall feel rewarded if this book helps ever so little this great work of mutual understanding and knowledge.

JOSEPH K. OKULITCH, Grad. Agr. Eng.
General Manager for Western Europe and America of the
Union of the Siberian Creamery and other Co-operative Associations,
Boston, Mass., U. S. A.

October 1, 1919.

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INDEX OF CHARTS

1. Physical Map.
2. Soils.
3. Isotherms and annual precipitation.
4. Isotherms and summer precipitation.
5. Isotherms and winter precipitation.
6. Vegetation of Western Siberia.
7. Population of Western Siberia.
8. Races of Western Siberia.
9. Ways and communications of Western Siberia.
10. Trades and occupations of Western Siberia.
11. Mineral Deposits of Western Siberia.

COMPARATIVE TABLE OF RUSSIAN AND AMERICAN MONEY AND MEASURES

1	Rouble in gold	51.46 cents
1	$	1.94 roubles
1	pood (40 Russ. pounds)	36.1 English pounds
1	short ton (55.41 Russ. poods)	2000 English pounds
1	long ton (62.06 Russ. poods)	2240 English pounds
1	metric ton (61 Russ. poods)	2204.7 English pounds
1	desiatina	2.705 acres
1	acre	0.37 desiatines
1	versta	0.663 miles
1	mile	1.508 versts

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"THE UNION OF THE SIBERIAN CREAMERY AND OTHER CO-OPERATIVE ASSOCIATIONS" AND THE COUNTRY SERVED BY THIS ORGANIZATION

Organization. The Union of the Siberian Creamery and other Co-operative Associations, on January 1st, 1919, combined about 2100 butter-making associations and 2300 co-operative stores.

The membership of these organizations is composed of about 600,000 heads of peasant and Cossack households of Western Siberia, comprising about 42% of the whole population of the territory where the Union of the Siberian Creamery Associations has its creameries and stores.

In its activities the Union covers the entire region of the Siberian butter-making industry, which sprang up about a quarter of a century ago and which, during the twenty years prior to the World War, developed to gigantic proportions in the northwestern part of the Asiatic continent, called Western Siberia. It now occupies the southern third of Western Siberia, equalling in size one-third of the whole United States.

The Siberian Butter-making District. The Siberian butter-making district is situated in the southern part of the river Obi basin, between the southern part of the Ural Mountains and the Altai mountain region, the latter being also a part of the butter-making district. On the accompanying maps it will be seen that the butter-making industry of Siberia thrives between 59 and 86 degrees east longitude (Greenwich). The western and middle part of the district lies between 57 and 53 degrees north latitude, and the eastern part of the district lies between 49 and 56 degrees north latitude.

The Boundaries of the Butter-making District. On the western side, the district joins the great wooded mountains of the Urals. With its comparatively dense population this territory does not allow the cattle as much freedom as is necessary to develop butter making according to the Siberian system of dairying. On the north the district is bounded by the wooded expanse of Western Siberia, where the natural conditions do not favour the development of butter making, the scanty population deriving sufficient means of livelihood from fishing, hunting and lumbering. The eastern side joins the severe mountains and forests of the eastern Altai range, inhabited by semi-wild tribes. The southern side touches

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the territory of nomadic Kirghyz, where the peculiar mode of living makes butter-making a difficult proposition.

It will easily be noted on the map that the western part of the district of Siberian butter-making represents a strip about 500 kilometers on both sides of the Trans-Siberian railway, while the eastern part broadens toward the south along the navigable rivers of Irtysh and Obi, with railways which branch off the main line,—the Koulunda railroad (from Tatarsk to Slavgorod) and the Altai railroad (from Novo-Nikolaievsk to Semipalatinsk). The reason is clear. Butter is a very perishable product and does not stand long transportation by horses; experience has shown that no butter factory should be farther than 200 or 250 kilometers from a railroad or waterway.

Administrative Composition of the Butter-making District. The following administrative units are within the boundaries of the Siberian butter-making district:

Government of:	**Districts:**
Orenburg	Cheliabinsk Troitzk Verkhne Uralsk (partly)
Province of Tourgai	Koustanai (northern part)
Perm	Shadrinsk (eastern part)
Tobolsk	Yalutorovsk Kourgan Ishim Tiukalinsk Tara (southern part)
Province of Akmolinsk	Petropavlovsk Omsk Kokchetav (major part)
Province of Semipalatinsk	Ust-Kamennogorsk Semipalatinsk Pavlodar (partly) Zaisan (partly)
Tomsk	Kainsk Novo-Nikolaievsk Tomsk
Altai	All districts of the Government.

The outline of the butter-making district of Siberia can readily be seen on the map.

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The Dimensions of the District of Siberian Butter-making. The greatest span is from west to east, and equals 2000 versts, or 2136 kilometers, or 1325 English miles. The width of the eastern part is 800 versts (855 kilometers, or 531 miles); of the western part, 500 versts, (534 kilometers, or 331 miles). The area is about 1,144,000 square versts (1,307,000 square kilometers, or 502,000 square miles.)

Configuration of the Land. The small western part of the district is hilly, being the foreground of the Ural mountain region. It rises to a height of from 200 to 500 meters above sea level. The southern part of the district includes the northern part of the Kirghyz ridgy land. The northern boundary line of this land turns toward the north in its western part; in the east it bears southward. The higher part of this elevation, known by the name of the Mountains of Kokchetav, is situated east of the river Ishim. This part is a collection of separate granite mountains, heavily wooded with pines and interspaced with undulating steppe valleys, covered with grass. These mountains do not rise to a height of more than 945 meters within the district.

South of the river Obi, and of its branch, the Alei, and the upper flow of the Irtysh, is situated the mountainous region of Altai, gradually rising toward the south and east. The highest part of the Russian Altai is along the upper flow of the river Katun, where the highest summit of the range is found,—the Beloukha, 14,800 feet above sea level.

The Altai range embraces a whole maze of mountain ranges, covered by eternal snows, with sliding glaciers, swift mountain rivers, and deep canyons. From the Altai proper toward the north the Salair range branches off between the rivers Obi and Tom and the range of Kouznetzky Alataou on the western side of the river Tom. Both ranges decrease in height toward the northward, and gradually merge into plains.

The remainder of the district is located in the great west Siberian lowlands, which stretch northward to the Arctic Ocean, and in the south reach, in the western part of the district, 54 degrees north latitude, and in the eastern part, near Semipalatinsk and the river Irtysh, 50 degrees north latitude.

In the southwestern part of the lowlands, the highest elevation reaches 105 sajenes, or 230 meters, above the sea level, and falls lower toward the north and east, rising again in the direction from the Irtysh toward the Obi.

The surface of the lowlands is mostly even, having only in the southern part narrow and long ridges from twenty to fifty feet in height, which run from due west-southwest to east-northeast. The general relief of the country can be seen from Chart No. 1.

Geological Aspect of the District. In the mountainous parts of the district, near the Altai range, on the eastern slopes of the Urals and on the edge of the Kirghyz hilly region are observed outcrops of stone layers

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Mt. Beloukha, Altai

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of most diverse geological epochs, from the granites and gneiss to sea formations of the Tertiary period. In the region which adjoins the Urals more recent formations are met with, of the cretaceous and Tertiary epochs, though the outcrops of granite are also in evidence.

In the stratified Kirghyz region elevations, bared of more recent deposits, consist of ancient granites, gneiss, syenites, diorites, and porphyries. Lower down on the slopes and in the areas between the elevations, deposits of more recent epochs are to be found. Devonian quartzites and shists, carboniferous strata, and oligocene sea deposits.

In the Altai Mountains are observed outcrops of various rocks, mostly of the Cambrian, Devonian, and carboniferous epochs, with occasional outcrops of gneiss and granites. The crystal shists are mostly found in the Altai.

The western Siberian lowland is a great hollow, filled up in its southern part with tertiary sea formations, not older than the Oligocene period, tertiary formations of Miocene and Pliocene epochs and quaternary fresh-water deposits.

All these formations are running in horizontal, unbroken strata, and are mostly soft and apt to crumble, belonging to clays, sand, and clayey soils; hard and semi-hard formations, such as sandstone, shists, etc., are seldom found.

How deep these soft, friable formations are is not known. It has been ascertained, however, that in the locality due north from the Ishym, about 55 degrees north latitude, the bore went down as far as 320 meters without meeting hard rock, passing all the way through soft and friable deposits.

The western brim of this great bowl reaches, approximately, the longitude of Cheliabinsk, while the eastern brim touches the river Obi, and the southern side runs along the edge of the Kirghyz ridgy land, where granites crop out from under the layers of soft soils.

Mineral Wealth. The deposits of useful minerals are distributed in accordance with geological formations.

Along the western, eastern and southern boundaries of the district, where outcrops of old hard rocks are found, there are also deposits of ores. In the middle part of the district and on the northern boundary, where old rocks are covered with deep layers of later deposits, the location and working of ore are impossible. In the Ural district are found deposits of alluvial gold, which are commercially worked near the railway station of Miass, due west of Cheliabinsk, and also in some other places. Quartz gold is worked in Kochkars, near the town of Troitzk. Near Cheliabinsk deposits of coal are worked. In several places in the Ural region fire clays, gypsum, limestone, iron ore, and precious stones are found. Along the southern boundary of the district, and immediately beyond it in the Kirghyz ridgy

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land, silver, lead, iron, copper, gold in small quantities, coal, graphite, lime, gypsum, and divers precious stones are found.

Near the southern boundary of the district, in Karaganda, coal is mined. Near Spassky Works, in the district of Akmolinsk, copper is commercially worked.

In the Altai range proper, and in the branching ridges, alluvial and quartz gold fields are worked, the output reaching about 300 poods (10,800 lbs.) annually, i. e., about 3.3% of the annual output of gold in the United States. Silver, lead, copper, iron, zinc, and wolfram (tungsten) are also found, but these ores have not been worked to any extent.

The largest variety of minerals is located on the southwestern side of the Altai range in the district of Zmeinogorsk, Government of Tomsk, and in the Salair range. More than 800 deposits of gold, silver, copper, lead, zinc, iron, jasper, malachite, etc., were located by prospecting. Alluvial gold is found in almost all mountain rivers of the Altai.

The coal basin of the Altai is one of the largest and richest, and extends along the river Tom, between the ridges of Salair and Kouznetzk Alataou in the district of Kouznetzk, Government of Tomsk. Coal is worked in the Anjer and Soudjen coal mines, near the main Siberian line, and also in the Kolchougin mines, south of the main line, being connected with it by a local railroad.

In the lowlands of the district no ores have been found and no stone with which to pave the streets can be obtained between Cheliabinsk and the Obi. Even coarse sand is very seldom met with in this locality. Sometimes, however, fireclays, limestone concretions and small quantities of iron ore are found.

In the water of numerous lakes are found considerable quantities of salt, which is obtained in summer when it crystallizes at the bottom.

Mineral Waters. In many points of the district there are mineral springs and lakes and accumulations of medicinal mud. The best known are Rakhmanoff Springs, in the southern part of the Government of Tomsk, and the Bielokurikhin Springs, 65 kilometers due south of the town of Biysk. The best known lakes containing medicinal mud are Karachin and Ustiantzeff lakes in the district of Kainsk, Government of Tomsk,—Solonovka Lake, in the district of Slavgorod, Government of Tomsk; and Krivin Lake, in the district of Kourgan, Government of Tobolsk.

Soils. The wealth of the district, however, is not so much in the minerals under the earth as in the soils on the surface. The district of the Siberian butter-making industry contains mainly the following varieties of soil:

1. Gray soils, with large contents of organic matter, small content of humus and insignificant content of soluble salts. These soils are peculiar to wooded localities, with a considerable amount of precipitation annually. They are but slightly fertile and must be manured.

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2. Black soils, with large contents of humus and an abundance of soluble salts. These soils form in localities with small quantities of annual precipitation, and with an abundance of grass. When these black soils become wooded they change, and approach the gray soils in their properties. Black soils are highly fertile and produce good harvest without any manure for many years.

3. Brown soils, with smaller contents of humus than in the black soils, and very large contents of salts. They form in steppe localities, with poor grass growth and a very small amount of precipitation. Their fertility is considerably lower than that of the black soils.

4. Light brown soils, with even smaller contents of humus than brown soils and greater content of salts, approaching in this respect saline soils. They form in localities where there is hardly any irrigation and vegetation.

5. Saline soils with hardly any humus but extremely large contents of salts of sodium, calcium, magnesium, potassium, sulphates and haloidites. The content of salts in these soils is so large that in dry weather white deposits of salt crystals sometimes a half-inch deep are formed on the ground. Owing to their being over saturated with salts, these soils are either entirely barren or grow only a few plants which are exceptionally adapted. Cereals are not adapted to such soils, but herbs growing on medium or slightly saline soils of the district, while not abundant, are nevertheless, highly nutritious for cattle and are well liked by animals.

Saline soils are found among black, brown, and light brown soils, occupying low, badly drained places with clay subsoil. Brown soils, oftener than black soils, have spots of saline soils, but in the black soils, spots of saline soils are met in increasing quantities toward the south.

The limits of expansion of the first four kinds of soil can be seen on Chart No. 2. One can see that in its even and steppe parts the butter-making district is mostly of black soils. Only on the edges of the district are the black soils replaced by gray soils in the north and brown soils in the south.

On the eastern verge of the district, in the outlying ridges of the Altai, black soils give place to gray soils with the addition of pebbles and stones. The strips of gray soils, like those of brown soils, are found only along river valleys. In the extreme southeast light brown soils are found. Saline soils are found in small plots among black, brown and light brown soils, in respectively increasing quantities. One can see that, in regard to soils, the Siberian butter-making district is in a very favorable state; almost the entire surface of the district is covered with soils of high fertility, which need no manure to give medium sized crops, and in years when good weather prevails they give excellent crops.

It can truthfully be asserted that **the fertile soils are the mainstay of the wealth of the district.**

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Climate. The average temperature of the district is considerably lower than that of other localities in the same latitudes; for instance, the average temperature of all points of the globe on the 56° 30′ parallel of north latitude is 3.5 Cels. (Cent.), while the mean temperature of the city of Tumen, which lies only 40′ (mins) to the north from the 56th parallel and close to the western frontier of the district is only +1 Cels.

In the eastern part of the district the average temperature of the city of Tomsk, which is in exactly 56° 30′ north latitude is —1° Cels.

Chart No. 3 shows that the whole district is covered by the annual isotherms —1°, 0°, +1°, +2°, +3° and that the isotherm +4° passes only over the southeastern extremity of the district, which is due south of 50° north latitude.

This low mean temperature is explained by the remoteness of the district from the Atlantic Ocean. The warm western winds from the ocean reach the district in a considerably cooled state, while the cold northeastern air currents have easy access to the district.

Owing to this, the farther to the east the colder is the climate. Kourgan, Government of Tobolsk, and Kainsk, of the Government of Tomsk, are situated on the same latitude, 55° 26′ north, yet the annual mean temperature of the former is +1.35°, while that of the latter is —0.8°, that is to say, 2.15° lower, for the sole reason that the town of Kourgan is more to the west by 13 degrees. For the same reason, the town Barnaul, which is 2 degrees due south and 18 degrees east from Kourgan, has an average annual temperature lower by one degree than Kourgan. The lowering of the isotherms from west toward east can be concluded also from their direction, as shown by chart No. 3, which is from N. W. towards S. E.

Having a low mean temperature, the climate of the district shows at the same time a great difference between summer and winter readings, which is unknown in maritime districts, and is due to the excessively low readings during the winter and very high readings in the summer months. Chart No. 4 shows that the July isotherm 20°, which in Southern Europe passes along the northern shore of the Pyrenean Peninsula (44 north latitude) and through Paris (49 north latitude) passes, in the butter-making district, through Kourgan, Tiukalinsk, Kainsk, Tomsk. Of the enumerated towns, the first three are a little due north from 55 north latitude while Tomsk is 56° 30′ north latitude.

The northernmost parts of the district have mean temperature in July not lower than 19°, while the southeastern extremity of the district, which is 49′ north latitude, has mean July temperature of 24°, which equals that of Constantinople (40 north latitude), Genoa, Lisbon and Gibraltar.

The high summer temperature favors plants which ripen quickly and demand abundant warmth. In that district watermelons fully ripen in open fields. That is not possible anywhere else in the Old World at 55 north latitude.

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The wheat belt reaches its most northern point in Western Siberia.

Winter in the Siberian butter-making district is very cold. Chart No. 5 shows that the January isotherm —20°, passes in the western part of the district over 58° and 60° north, where the influence of the Atlantic Ocean is felt more. Then in the middle part of the district it passes almost 54 north latitude, and in the Altai region, where the winter temperature is tempered by the abundance of precipitation and nebulity, due to the influence of mountains, the isotherm passes 57 north latitude.

The mean January temperature in the above mentioned parts of the district varies from —16° to —22°. The former reading (—16°) is observed only on the extreme west and extreme southeast (see chart No. 5).

The low winter temperature does not allow oak, beech, maple or ash trees to grow anywhere in the West Siberian butter-making district. Apple and pear trees can be grown only in the southernmost part of the district. Cherry grows as a dwarf bush with small leaves and berries.

As the summer temperature of the district reaches 35° in the shade and winter temperature —45, there is an annual range of extreme readings of 80°, with a range for mean January and July temperature at 42°.

In the district there are not only great variations in the annual temperatures, but also in the daily ones. The air being dry and the sky clear, it often happens that a hot day is followed by a cold night, which towards morning, particularly during Spring and Autumn, reaches below zero, destroying many plants. Therefore the period of vegetation, i. e., between the last frosts in Spring and the first frost in Autumn, is very short, lasting, in the central part of the district, 150 days; toward the south this period is lengthened by a few days, and toward the north it is a few days shorter.

This peculiarity of the climate does not permit the cultivation of slow ripening plants, such as corn (maize) sugar beetroot, etc. The successful cultivation of these plants is possible only in the southeastern part of the district, where the period of vegetation is longer and the climate warmer in localities protected by mountains against cold winds from the north and northeast.

Amount of Precipitation. As to the amount of precipitation, the conditions in the district of the Siberian butter-making are not very favorable. As Chart No. 3 shows, the major part of the district has less than 40 cms. of precipitation yearly, a considerable part of the district has 40-50 cms., and by far the minor part enjoys 50-60 cms.

The largest amount of precipitation falls in two parts of the district. One part is in the west, bounded on the east and north by Irtysh, on the west by the Tobol, and in the south reaches 56° north latitude. The other part is in the region of the Altai Mountains, and can be bounded by a line passing 100 kilometers due west from Mariinsk and through Kouznetzk,

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Zmeinogorsk, Ust-Kamennogorsk and further eastward to the frontier of China.

The part of the district with 30-40 cms. of yearly precipitation and the part due south from this, which has only 20-30cms. yearly, is bounded by a line passing in the direction from W-N-W to E-S-E. Thus the warmer eastern part of the district, situated more toward the south, has a larger amount of precipitation owing to its mountainous character. Chart No. 4 shows the quantities and distribution of precipitation in the district during the summer half year. The chart shows that the largest amount of summer precipitation, namely, 200 mms., is observed in the same localities as the largest annual amount, and also that the major part of the district, except the most southern part of it which has a very irregular northern boundary, has on the average not less than 150 mms. summer precipitation. Due south from this locality is situated a zone with an average of not less than 150 mms. of summer precipitation. Still further south lies the belt which has not more than 100 mms. The northern boundary of that part in its western section lies much more northward than the eastern or particularly the middle part of it.

Chart No. 5 shows that in the winter months the amount of precipitation is much less than in the summer months.

In the northern part of the district, which is more thickly wooded and thus facilitates the accumulation of snow, the amount of precipitation in winter is more than 50 mm. However, in the major part of the district the winter precipitation varies from 25 to 50 mm., and only in the middle of the district is there found a part of the belt which has less than 25 mm. of winter precipitation.

A small amount of snow in the southern part of the district does not favor cultivation of winter crops, as, being deprived of the snow cover, the plants are killed by frost.

The western and middle parts of the District South of 56° north latitude often suffer from drought, as the annual amounts of precipitation vary greatly, and years with 550 mm. of precipitation are followed by years with only 120 mm.

Irrigation. Owing to the small amount of precipitation and the great evaporation of precipitated moisture caused by considerable warmth and dryness in the air, there is a great field for development of artificial irrigation in many parts of the district.

Rivers. Except for rivers that flow from the glaciers of the Altai, no rivers in the district have much water, and their lengths are not proportionate to their breadths and depths. Among the rivers which have their source in the Altai range, the most important are the rivers Katun and Bia, which form the river Obi and its tributaries, the rivers Tom, Choumysh and Charysh. All these rivers, as well as Irtysh, have

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mountainous character only in their upper course. They are all swift, with stony bottoms, clear cold water and great floods during summer caused by thawing of glaciers in the mountains or by heavy showers. Of these rivers only the Irtysh and Tom are navigable; the rivers Charysh and Bia are navigable for a short distance from their mouths. The rest of the rivers of the district have all the characteristic features of valley rivers, namely, soft, crumbling banks, sandy or oozy bottom, slow current, muddy water and winding course, if the river is small, or, dividing into several branches, if the river is big. In Springtime when the snow thaws, these rivers overflow over wide tracts; in the middle and end of summer they become shallow. The river Obi, beginning at the confluence of the rivers Katun and Bia, is partly of that character; in a greater degree Irtysh in the northern parts of the Provinces of Semipalatinsk and Akmolinsk and the left tributaries of Obi are completely so. Among this kind of rivers may be counted the left tributaries of Tobol, which, though they flow from the Urals, have in their middle and lower course all the distinctive features of the rivers of the plains.

Lakes. The district is very peculiar, inasmuch as there are great stretches of land without any rivers or other kind of flowing water. The stretches of land dividing the rivers Isiet and Miass, Miass and Uyi and Tobol and Ishym, Ishym and Irtysh, Irtysh and Obi, are plains with such small gradients that the moisture precipitated from the atmosphere accumulates in the depressions and forms lakes, mostly small. These are very numerous. For instance, in the district of Kourgan, Government of Tobolsk, with an area of 28,000 sq. kilometers, there are 500 lakes of area varying from 80 sq. kilometers to 0.25 sq. kilometers.

The depth of all lakes in the steppe belt, varies from 2 to 8 meters only, with low-lying and flat banks and sandy or oozy bottom. Many lakes have fresh drinking water but the farther south the more rapid the evaporation, with the result that the lakes contain a more or less concentrated solution of salt. These lakes are salt, bitter or alkaline. The height of the water in the steppe lakes varies from year to year, and the more shallow ones sometimes entirely dry up.

In the years characterized by low water, many slightly saline lakes become very salty; when the water rises the salt solution becomes weaker. It has been noted that lakes fill up and dry periodically. The length of the period is about every 40 years, but this phenomenon, as well as its causes, have been studied very slightly.

The majority of lakes are situated at the bottom of isolated depressions, and have no connection between them, but where the land has a gradient there are systems of lake with different levels and connected with one another by running water either during the whole year or only in the Spring. In such systems all lakes except the lowest are fresh water while the lowest, which has no outlet for its water and where

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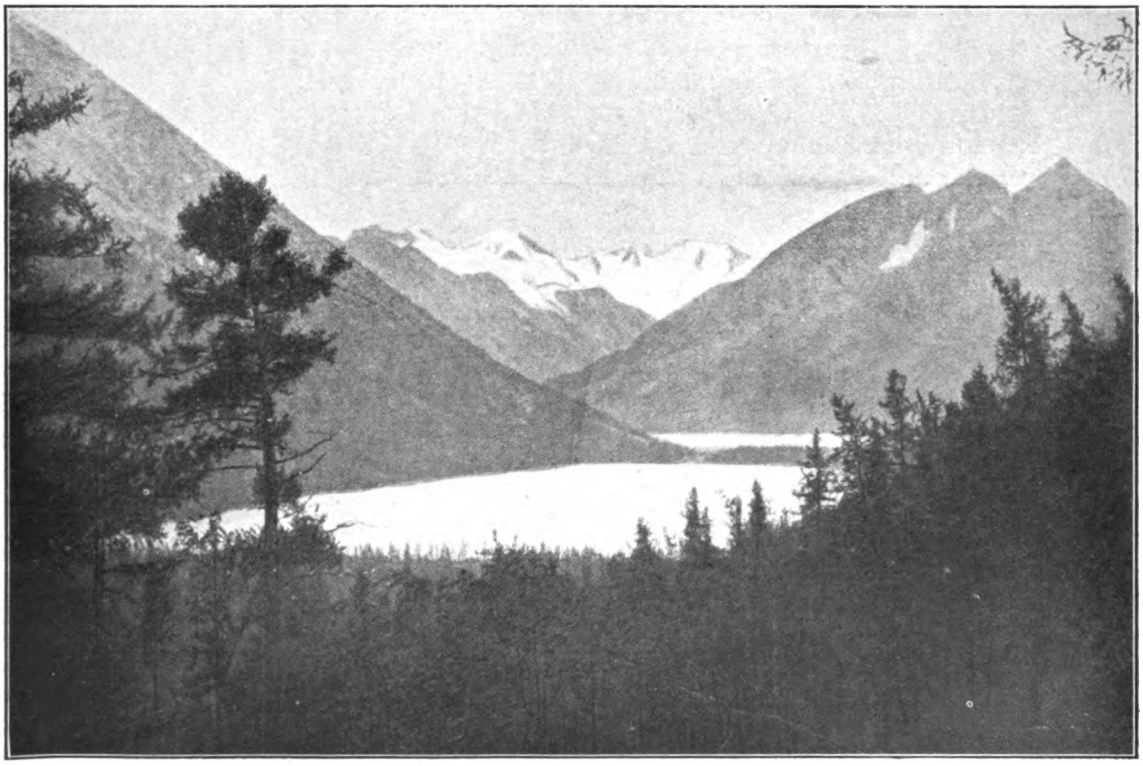
Rocks on Lake Borovoe



Lake Moultinskoe, Central Altai

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accumulate all salts washed out of the ground, are always mineralized. Such chains of lakes may be regarded as uncompleted rivers of interior basins. In localities with stepper inclines a chain of lakes becomes converted into a peculiar river which sometimes broadens in its course like a lake, and sometimes becomes narrow like a brook, in this way showing its descendance from a chain of lakes.

The lakes which are fed by the rivers of the interior basin, contrary to small isolated lakes, are of considerable size. Of such lakes should be mentioned Lake Chany, with tributaries Kargat and Choulym, in the Southwestern part of the government of Tomsk. Lake Chany is fresh water in the eastern end, where these rivers flow in, and salty water in its western end.

In the province of Semipalatinsk, near the town of Pavlodar, the salt water Lake Koriakovsk is situated, where, owing to the proximity of a navigable river, the deposits of salt are worked on a big scale.

In the province of Akmolinsk the largest lakes of the district under consideration are: Lake Kyzyl-Kak, Lake Selety-Degiz, which is fed by the river Selety, Lake Teke, Lake Oolk-Karoi, Lake Chagly, with the tributary, Chaglinka.

In the Government of Tobolsk, the salt water lakes are less numerous. Of these must be mentioned the fair-sized Lake Miedvezhie, (the Lake of the Bear), near the railroad connecting Petropavlovsk and Kourgan, which is famous for its curative mud. Of fresh water lakes, which form the source of some rivers, the most remarkable is a picturesque mountain Lake Teletzkoe, in the eastern Altai, from which flows the river Bia, and the double Lake Saltaim-Teniz, in the district of Tiukalinsk of the Government of Tobolsk, from which flows the river Osha, one of the left tributaries of the Irtysh. A group of fresh water mountain lakes, Lake Borovoe and others are situated in a picturesque wooded mountainous locality in the western part of Kokchetav, of the Government of Akmolinsk. This district is most popular all over Siberia as a health resort, and is famous for its salubrious climate.

In the western part of the district on the frontier of two provinces of Tourgai and Akmolinsk, is situated the salt water Lake Ubagan-Koul, from which the salt water river Ubagan flows which joins the river Tobol and makes the water of the latter noticeably salty for a distance of over 150 kilometers. This is a rare phenomenon, which is worthy of being recorded.

Vegetation. According to the character of the vegetation, the Siberian butter-making district can be divided into five parts. North of 57 degrees in the west and 55 degrees in the east lies a belt of woods peculiar to the plains. This belt is joined on the south by the belt of steppe woods, which is 500 kilometers wide in the west and about 600 kilometers wide in the east, in the region of the Altai Mountains. In the middle on the watershed between the Irtysh and Obi, the belt of steppe woods narrows down

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to 150 kilometers. South of the belt is a wider belt of feather-grass-covered-steppe. South of this steppe lies a wormwood-grass-covered-steppe, which enters the butter-making district as a narrow strip on the southeastern side. The eastern part of the district is for the most part occupied by the region of mountain forests and alpine flora. The situation of these belts is shown on chart No. 6.

In the belt of woods of the plains the soil in well drained localities is of the gray kind, and in the flat inter-river spaces are numerous marshes.

The larger part of the locality is wooded. Of acerose trees, the pine occupies mostly dry, sandy areas to the exclusion of other kinds of trees, such as red fir; and further north the cedar is found, a great tree which gives valuable wood and cedar nuts, a very popular dainty in Siberia. To the acerose plants, the juniper also belongs, with hard needles and blue resinous berries.

Of foliate trees, the birch, aspen, black poplar, and alder grow here, and various kinds of willows. Of bushes, there are found sweet briar, osiers, honeysuckle, and sallowthorn, and of berry-bearing bushes. sorb, bird cherry, black and red currant, snowdrop tree and hawthorn.

Of herbaceous berry-bearing plants the following are peculiar to the district: raspberry, strawberry, stone bramble, red bilberry, blueberry, cloudberry and blackberry. Berries in Siberia replace fruits, the cultivation of which is impossible owing to the severity of the climate. Berries are eaten by everybody in summer and preserved for winter in the form of jams, or in dried, soaked or frozen state (cranberry and bilberry).

The grass in the wooded country is abundant, tall and juicy, but as fodder it is not as nutritious as that of the more southern districts.

There are cultivated winter rye, which is greatly assisted by the deep snow cover; oats, exclusively to feed horses; barley, which is used to make flour or grits; flax and hemp. Wheat is little cultivated.

Of vegetables the following are successfully grown: cabbage, beetroot, turnip (various), radish, pumpkin. Sunflowers and peas can be grown only in kitchen gardens, and cucumbers can be raised only in warmed beds. Between the forest belt and the belt of feather grass steppe there is a belt of "forest steppe" where woods grow, interspaced by patches of black soil steppe. Farther south, the woods are thinner and the character of the country more approaches the steppe. Of needle-leafed trees there grow only pine in a few places, chiefly on sandy, narrow strips on the slopes toward the valleys of the rivers, Tobol, Ishym, Irtysh, Obi and its left tributaries, Barnaulka, Kasmala and others. Of foliate trees, birch grows here almost exclusively, aspen being but seldom found. Black and silver poplar, alder and various kinds of willow grow only on the river banks.

The flora of bushes is poorer in this belt than in the forest belt. In addition to various kinds of osiers, which thrive along the river banks and in damp localities, providing bark for tanning, there grow in a few places

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and in small quantities, bird cherry, currant, sweet brier, hawthorn, meadow sweet and wild cherry.

Berry-bearing herbaceous plants are also less numerous in this district, only strawberry and stone bramble being found.

The herbs of the forest steppe belt are not so thick, tall and juicy as those of the forest belt, but at the same time they are very nutritious and the cattle of the belt are bigger and fatter than in the forest zone.

The most luxuriant growth of herbs is found in the Baraba Steppe—a location between the rivers Irtysh and Obi. The thick, juicy and tall herbs of this locality favor stock raising and dairying, and by the amount of butter produced, this locality heads the list.

In the belt of forest steppe the good fodder herb, Medicago Falcata, grows in great quantities. It is known in the United States under the name "Alfalfa." Wheat is greatly cultivated in this belt, occupying more than half of all cultivated land. In the southern part of the belt hard wheats of high class grow well, but in the middle and northern sections these wheats do not thrive. The second cereal, in quantity, is oats. Spring rye, barley, peas, buckwheat, millet and sometimes spelt, flax and hemp are growing. In the southeastern section sunflowers are also grown, and potatoes thrive well in kitchen gardens.

The sowing of winter rye is not widely practiced, as the scanty snow cover is not sufficient protection against the frosts. In the southern section of the forest steppe belt cucumbers thrive in fields, as do also melons and watermelons, which do not reach great size, but are very sweet.

There is no fruit grown in the belt, as the fruit trees imported from European Russia cannot stand the local winters and no local type of fruit tree has yet been obtained. The next belt toward the south is the feather grass steppe, where there are very few woods.

Acerose woods are found on granite mountains of the northern section of the Kirghyz ridgy land, especially on the Kokchetav table land, due east from the river Ishym, and on sandy stretches alongside the rivers Irtysh and Tobol.

The steppe is all covered with grass, with feather grass Stipa Pennata and Festuca Ovina prevailing.

Great quantities of gramineous, umbellar and papilionaceous plants also grow here, and in places groups of wild almond (prunus nana) are found, also meadow sweet, yellow acacia (caragana arborescens) etc.

Of trees, only birch is occasionally met with, but these are generally badly twisted and short living.

All growth is withered up by the end of the summer and the steppe takes on a brownish-yellow depressing tint. Of berry-bearing plants, there are found in the steppe in great quantities strawberry, and on the river banks blackberry and currants, while in places wild cherry, in the form of small bushes, is found.

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Only on the Kokchetav table land is the flora more varied, uniting the representative plants peculiar to the steppe proper to those of the forest steppe belt and the forest zone.

There is much saline soil in the steppe belt, with its peculiar scanty vegetation, of which cattle, and particularly sheep, are exceedingly fond.

The list of cultivated plants in the steppe is headed by wheat, which is of high class, followed by oats, millet, and sunflowers.

In the southeastern part in the district of Zmeinogorsk successful experiments with sugar beetroot have been carried out.

Cucumbers, melons and watermelons of great dimensions and sweetness thrive in the open fields of the steppe belt.

The vegetation and crops of the steppe often suffer from drought and insects of the family of locust (grasshopper and cicada.)

Flora of the wormwood steppe, which lies due south, is even scantier than that of the feather grass steppe. Trees and bushes are very seldom found, and then only growing on the river banks. Grass does not cover the whole ground carpet-like, but grows in separate tufts. Wormwood and other kinds of xerophilous plants prevail.

Vegetation of the Altai mountain country is abundant and variegated. Along low lying river valleys the stretches of the forest steppe and sometimes of the steppe itself penetrate into the mountain range.

The slopes of mountains, especially on the northern side are thickly wooded by great pines, firs, cedar, birch, larch, aspen, poplar, and in one place, near Kouznetzk, linden tree, which, evidently, is a reminder of the preceding geological epoch when the climate of the country was warmer and more humid. The character of vegetable growth in the Altai range changes according to the altitude as is the case in all mountain regions.

The lower slopes of mountains are covered with mixed woods of foliate trees and pine, the former not reaching to an altitude higher than 2500 to 3000 feet. Above that line the mountains are covered by thick sombre woods of fir, cedar, etc., which are fittingly called "blackness." Higher up one finds bright and gladdening forests of larch, with trees growing far apart, interspaced with a luxuriant growth of herbs. The region of forests in the Altai range breaks at the altitude of 7000 to 8000 feet. Cedar and larch reach higher altitudes than other kinds of trees, the former prevailing on the damp northern slopes and the latter on the dry southern inclines.

Still higher one finds the belt of the Alpine meadows. The altitude of 9000 to 10,000 feet marks the line of eternal snows.

Animals. Fauna of this land is as varied as the flora.

The sparsely populated country leaves much room to the wild animals.

Of large herbivorous animals, for which the climate is not favorable by reason of long and severe winters, there are found in the mountainous

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country of the Altai the elk, (Cervus Alces) mountain deer or maral, (Cervus Canadiensis Asiaticus) whose horns are highly valued in China, where a restorative medicine is prepared of them,—several kinds of mountain sheep and goat (arhar, argali) roe, mountain goat with great horns, musk deer (Moschus moschiferus),—a small bi-hoofed hornless animal with long canine teeth resembling tusks which is hunted for the valuable musk—the Kabarga castor.

In the steppe roe, hooked nosed saiga are found, and the graceful djerian of the antelope family: Koulan, a kind of wild ass, and in elevated places, wild goat (Capra Sibirica).

In pine woods which are situated in the forest steppe belt, roe thrives and sometimes great elk are found.

Of large prey animals, in the Altai range and in the northern part of the forest belt, bears are found, and all over the district in great numbers, wolves and foxes,—the former mostly in steppe localities where corsak is also found.

In the Altai range and in the forest belt, badger, lynx and wolverine are found, and in the Southern Altai is found carnivorous spotted irbis or Altai panther of the cat family, about the size of an ordinary panther.

Of small prey animals the Altai still preserve in remote localities, sable, marten, skunk, polecat, weasel, ermine, kolonok (Kolinsky).

In the forest belt river otter is found. Of insectivora, in the forest steppe, in the steppe and in the mountain region are found hedgehog and mole.

Of rodenta, the most abundant in the whole district are hares, rats, mice of various kinds which breed in the forest and the steppe belts. Rodenta peculiar to the steppe belt are jerboa or jumping hare, a small animal with long hind and short front legs, fat marmot or Tarbagan, Siberian marmot and hamster. In the forest and mountain regions squirrels breed in enormous quantities, the source of a profitable trade,—burunduk or striped squirrel, with a handsome coat and letiaga (flying squirrel—Sciuropterus Volans Russicus). In the mountains only red or mountain wolf is found, light yellow polecat, mountain marmot and rat hare,—a fairly large rodent. Of prey birds there are found all over the district several kinds of eagles, hawks, kites and owls. In the summer great numbers of wading and swimming birds such as cranes, herons, snipe of various kinds, swans, geese, ducks, plungeons, barnacles, gulls, etc., come to the steppe lakes.

The woods are inhabited by heath cocks, black martins, partridges, hazel hens. These birds winter in the district and enable the population to carry on a considerable trade in shipping frozen wild birds to European Russia and abroad. At the Altai range a great item of export is quail, the meat of which is very sweet.

On high summits of the Altai ullar or mountain turkey is found, of the same size as home turkey. In the steppe, big swiftly running bustard are found.

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There are more than 200 different kinds of grani- and insectivorous birds. Almost all of them, with a few exceptions, are migratory, as also are the wading and water birds.

Of reptilia, there is found all over the district viper (vipara berus) and viviparous lizard (lacerta vivipara); very often three kinds of snakes are found: common-tropidonotus natrix, checkered-tropidonotus hydrus and crawling-eryx jaculus. Reptiles are especially abundant in the southern Altai and this is reflected in the name of the town of Zmeinogorsk, which in Russian means "Snake Mountain Town."

In the southernmost part of the district river turtles are sometimes found.

Of amphibious animals several kinds of medium sized frogs are found, tetradactylous triton and two kinds of toads, grey and green.

Of cartilaginous fishes in large rivers of the district, like Obi and Irtysh, are caught valuable sturgeon and sterlet. Of the salmon family, in the same rivers and their larger tributaries, are found the tasty nelma or Siberian salmon and in the mountain rivers of the Altai live umber and talmen,—two excellent fishes for the table. Sometimes from the northern flow of the Obi fish of the salmon family come up the river Obi, which are peculiar to the far north, i. e., salmo-vimba and moxun.

In the rivers and flowing lakes all over the district abound pike, perch, bass, roach, eel-pout, common gremille, gudeon, bream, tench, while in the standing fresh and slightly salt lakes are found crucian carp weighing up to 8 lbs., the most numerous fish of the steppe and forest steppe belts. The great Lake Chany and its smaller neighboring lakes are particularly famous for the abundance of fish.

Of insects in the forest belt, as well as in the valleys and in the Altai range, are enormously abundant bloodsucking insects,—gnats, mosquitoes, horse and ox flies, thrips, etc. They are the true scourge of the country, which do not let man or beast alone in the summer. This abomination, as the Siberian peasant calls these torturers, makes it impossible to remain in the woods without gloves and net for the head, or to sleep without smoking fire, while for animals, not excluding the long-haired bear, there is only one means of escape—to wade as deep as possible in the water and stay there.

This scourge is absent in the steppe, which is constantly swept by winds. However, the steppe in dry years swarms with locust which devour the harvest and grass, and sometimes cause great losses to the tiller.

In the steppe also abound poisonous spiders, tarantula and karakourt, the bite of which is very dangerous.

The Altai range with its luxuriant vegetation and comparatively mild climate presents favorable conditions for bees, and apiculture is a very popular and profitable trade in the district.

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The Natural Wealth of the District. As can be easily seen from the foregoing description of the district of the Siberian butter-making, the region has a great natural wealth and a brilliant economic future. The dimensions of the district, which is double the size of Germany, the great amount of fertile land and good pasturage, untapped riches of the forests in the north and east of the district, climate which permits of the cultivation of high grades of wheat, watermelons and melons, and which, in spite of the severity of the weather is very good for man; great mineral wealth, long navigable rivers, which cut through the district, abundance in the mountains, forests and steppes, of valuable fur-bearing animals,—in the rivers and lakes, of fishes,—make the district a good field for enterprising and creative labor, and guarantees to the inhabitants a high material prosperity.

Insufficient Development of Natural Resources. What follows will show that, as far as the utilization by man of the natural resources of the district of Siberian butter-making is concerned, the district is still in the first stages of its development, and the economic future of the district promises much more than the district has so far yielded to man.

Population. The district, in comparison with its area, is very scantily populated. In all districts where butter-making is developed, according to the figures for 1915, there were only 8,300,000 inhabitants of both sexes.

Of this number 7,949,200 are rural population, and only 350,300, or 4.2%, are living in towns, which clearly indicates the exclusively agricultural character of the district and the slight development of manufacturing industries.

Density of Population. The density of population in towns and country is 7.2 to the square versta, or 6.3 to the square kilometer or 16.5 to the square mile.

The density of rural population is only 6.9 to square versta, or 6.1 to square kilometer or 15.8 to the square mile. One can easily see what great amount of land the population has at its disposal.

To give an idea how the land in Siberia is distributed among the landowner, it is sufficient to point out that out of 121,500,000 desiatins, or 328,378,300 acres, which represents the Government of Tobolsk, including the part which is outside of the district of butter-making, 63,263,000 desiatins, or 170,908,100 acres belong to the State (this land mostly being forests and partly tillable land and meadows which are rented by the peasants), 270,000 desiatins, or 775,600 acres—belong to private persons and 11,540,000 desiatins, or 30,811,800 acres are state grants to rural communities numbering 1,975,000 of both sexes, which represents an average of 5.84 desiatins, or 14.6 acres per head. The balance of the land of 45,700,000 desiatins, or 123,513,500 acres either belongs to the tribes

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of other than Caucasian race or are jointly used by the tribes and the State. It is necessary to point out that two-thirds of the Government of Tobolsk is situated in localities where agriculture is impossible, it being the region of uninhabited forests and tundra (marshy Siberian plain), while five-sixths of the land, granted to the rural communities, and all private lands, that is to say the most productive lands, are situated in the south of the Government, in the district of butter-making.

Reckoning on the average a family as consisting of six people, we find that a household in the Government of Tobolsk has at its disposal not less than 35 desiatins, or 97.3 acres. In the provinces of Tomsk, Akmolinsk and Semipalatinsk, there is still more land available.

Distribution of Population. The population of the district of the Siberian butter-making is distributed very unevenly. A general idea of the comparative density of population can be obtained from diagram No. 7.

From this diagram it will be seen that the most densely populated part of the district lies on the northwest, comprising a part of the district of Shadrinsk, Government of Tomsk, district of Cheliabinsk, Government of Orenburg and district of Kourgan, Government of Tobolsk. The density of population in this locality is the highest in the district of Shadrinsk, reaching 27 people to one square versta, or 22 people to one square kilometer, or 61 people to one square mile. The lowest is in the district of Kourgan, there being 18 people to the square versta, or 15 people to the square kilometer, or 40 people to the square mile.

In the eastern part of the butter-making district, the districts of Kamen, Barnaul and Novo-Nikolaevsk, Government of Tomsk and Altai, have the densest population, reaching to 14 people to the square versta, or 12 people to the square kilometer, or 34 people to the square mile. The lowest density of population is observed in the districts of Kainsk and Ust-Kamennogorsk, Government of Tomsk, where the population is distributed at the rate of about 2.8 persons to the square versta, or 2.4 persons to the square kilometer, or 6.8 people to the square mile.

Possibilities for future growth of population. No doubt can exist on the subject of the great unused capacity of the district for colonization. As is well known, the capacity of country for colonization is governed by two factors: the natural productiveness of the country and the degree of perfection in the methods of creative labor. It is safe to assume that with the present imperfect methods of work the district of the Siberian butter-making can supply sufficient means of livelihood for a population as dense as that in the most thickly populated parts of the district,—i. e., 27 people to the square versta, or 22 people to the square kilometer, or 61 people to the square mile.

According to this conservative estimate, the district of the Siberian butter-making can easily accommodate 30,000,000 persons, and with more

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perfect methods of agriculture and manufacture, the quick improvement of which has been lately evidenced, it can accommodate twice that number, or up to 60,000,000 people.

Ethnographic Composition of the District. As to the race, the district of the Siberian butter-making is mainly Russian. Though in the provinces and districts, parts of which compose the butter-making districts, there is numbered about 20% representatives of non-Caucasian races (mainly of Turco-Tartars), more than 60% of these tribes reside in the districts outside the Siberian butter-making region and thus the proportion of the non-Caucasian population in the district is not more than 9%. The highest percentage of other than Caucasian tribes is found near Western, Southern and Eastern boundaries of the district, while the thickly populated central part of the region has an insignificant proportion of representatives of other tribes. Thus in five districts of the Government of Tobolsk, with a total population of 1,600,000, there are only 19,000 Tartars, less than 1.2%. The chart No. 8 shows the distribution of the population of other than the Caucasian race. These tribes are less civilized than the Russian population of the same district.

Kirghyz. The great majority of these tribes represented by the Kirghyz and partly by the Altai tribes are still nomads, residing during the summer in portable huts made of felt, and in the winter moving into small, cold, and dirty earth-beaten huts, where they crowd together with newly-born calves and lambs to prevent both men and animals from perishing in the severe cold.

Stock raising is the only trade of the nomads. They have lately acquired the habit of settling, for land cultivation, but this development is progressing very slowly.

Bashkirs. The Bashkirs in the Government of Orenburg, although they have left behind the nomadic mode of living, are lazy, careless, bad farmers and in spite of the abundance of land to be had, they remain poor.

The Altai Tribes and Tartars. Almost exactly the same must be said of the Altai tribes. The Tartars of the Governments of Tomsk and especially of Tobolsk are more civilized. They are all permanently settled and their houses are sometimes quite well arranged, they cultivate land and trade. Most of them read and write their own language, some of them know the Russian language, but the majority are poorer than the Russians and their methods of agriculture are less advanced.

Russians. The Russian population in the butter-making district is divided into three groups: 1. The "old-timers," that is the descendants of the first settlers who came into the country 150 to 300 years ago, 2. Emi-

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Horse of Altai Tribe

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grants who came into the country from European Russia during the last 25-30 years, and still preserve all the habits of the mother country, and 3. Cossacks, who live in villages, descend mainly from the old-timers, are liable for military service, and have military organizations.

The old-timers are the most numerous and economically strong group. They live in large villages in well built wooden houses, which often have two floors with 2 to 4 living rooms. Food, clothing, furniture and household utensils are more plentiful among the old-timers and of better quality than those of the peasants of European Russia.

It is quite common to find, in the houses of the old-timers, floor carpets, window curtains, wall-papers, good lamps and mirrors, furniture, stuffed and of bent wood (from Vienna), photographic pictures, gramophones and flowers, all of which one will seek in vain in a poor house of the peasant of European Russia. A sewing machine is a necessary part of every household, and the majority of the old-timers have hay mowers, harvesters, ploughs, cultivators and other agricultural machinery. They usually have also nice sleighs and traps, good harness and good horses for personal use.

The peasants, old-timers, of Western Siberia are descendants of the emigrants from European Russia, mainly from the north, where long ago the emigrants from Free Novgorod lived. This ancient republic has never known the serfdom of interior Russia. The ancestors of the old-timers brought to Siberia their love of freedom, strong character, and steady working habits, which have developed in the severe surroundings of the forests of their motherland.

Among them were many "old believers," who were persecuted for their creed and who sought the freedom of their conscience in the free lands of Siberia. These were people of high morality, well disciplined. moderate, industrious and reliable comrades.

In the expanse of Siberia, where Mother Nature generously rewards the industrious but does not favor the idle, the moral qualities of descendants of the energetic and freedom-loving Novgorodians have developed still more.

The Siberian is distinguished from his Trans-Ural cousin by his highly developed sense of individuality, for he has never known the humiliating influence of serfdom. The material prosperity, obtained solely by work and brainpower, has still more developed his self respect as well as his requirements. He is not satisfied with the primitive pauper mode of life to which the peasant of European Russia has grown accustomed. The Siberian peasant moulds his life after the "city" manner.

The fight against natural hardships has developed courage, resourcefulness, and quiet, manly bearing. They make the best soldiers in the Russian army. Life in a prosperous but ungracious country has developed the reasoning and calculating facilities, little favoring the sense of and leanings to the beautiful.

Though the number of persons who read and write is proportionately

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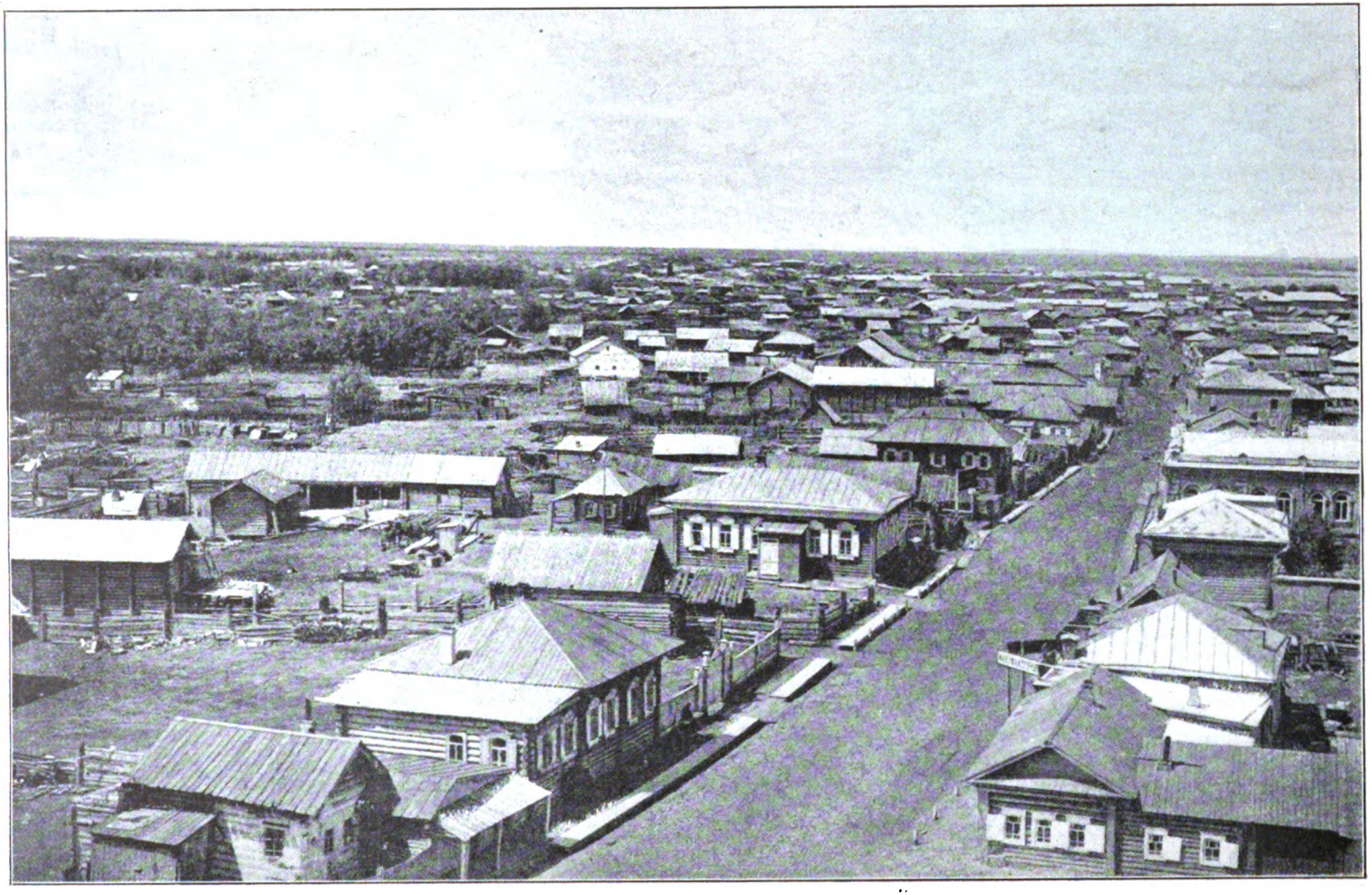

Village Kamen, populated by the "old-timers" in the Government of Tomsk

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smaller among the Siberian population than among the population of European Russia, the Siberian looks more intelligent and civilized than his Trans-Ural cousin. The Siberian resident is not a man of routine and readily accepts innovations and improvements.

Emigrants. The second distinct group of the Russian population of this district are emigrants from divers governments of European Russia, who were driven to Siberia by the overcrowded state of the peasant lands. They were assisted by the Government by reduced fares, money loans and grants, medical and feeding organizations on the way and at the places of destination. They were also induced to come to this country by exemptions from taxes and from conscription during the first years. The emigrants settled in the butter-making district and the neighborhood, during the time from 1893 to 1912, numbered in round figures as follows: Government of Tomsk, 1,100,000; Province of Akmolinsk, 600,000; Government of Tobolsk, 320,000; Province of Tourgai, 200,000; Province of Semipalatinsk about 100,000.

The emigrants generally are considerably poorer than the old-timers and unfavorably compare with the latter on account of their slovenliness, scarcity of household furnishings, and less developed requirements. Yet many of them brought from their motherland, where life was more difficult, the habit of steady work, and this soon enabled them to rise to a high degree of material prosperity in Siberia. This is especially true with regard to the Little Russians, who are good farmers and have been used in the old country to the methods of cultivating dry steppes.

Cossacks. Cossacks came to the butter-making district at the time of the Kirghyz and Bashkirs raids on Russian settlers. That was before these tribes became subjected to Russian rule. The Cossacks settled in parts of the districts of Cheliabinsk, Troitzk and Verkhneuralsk, all of the Government of Orenburg, also along the whole northern boundary of the Province of Akmolinsk and on both banks of the river Irtysh from 10 to 40 versts (10.67 to 42.68 kilometers or 6.63 to 26.52 miles) deep in the Provinces of Akmolinsk and Semipalatinsk, and also on a considerable area in the district of Kokchetav, Province of Akmolinsk.

The whole Cossack population in the district of the Siberian butter-making is about 300,000. Half of this number belongs to the Siberian Cossack Troop, whose settlements are situated in the Provinces of Akmolinsk and Semipalatinsk. The other half belongs to the Orenburg Cossack Troop and live in the three above mentioned districts of the Province of Orenburg.

The Cossacks are more developed, more educated and more advanced in their internal organization than the peasants, (old-timers), but the latter are better farmers. The Cossacks, being liable to military service, cannot give their undivided attention to their farms. Although the Cossacks

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have more land than the peasants, (the old-timers), they are no richer than the latter.

Means of Communication. (Chart No. 9). As is well known, cheap and convenient means of communication are of primary importance for the industrial development of a country. In this respect the conditions of the district of Siberian butter-making are not quite favorable.

Owing to scanty irrigation, the rivers of the district are shallow, while natural dry roads and cheap water ways are very few.

River Obi near Town of Barnaul

Navigable Rivers. The following rivers of the district are navigable: Obi, from the point of its becoming navigable to the boundary of the district i. e. for about 1300 versts, Irtysh, along its entire course through the district for 2500 versts, Tom, for 550 versts and Charysh, for about 340 versts. The waterway of 415 versts from Tobolsk to Tiumen, though outside the district, must be mentioned here, as it constitutes the extension of the Obi and Irtysh before Tiumen, where the most western point of the navigation of the Obi system joins the Russian railway system.

The total length of the water ways in the district is about 5,105 versts or 3360 miles, which is the rate of one verst of water way to each 224 square versts of land or 1 mile of water way to each 152 square miles.

As can be seen from the map the water ways allow goods to be moved from the richest south-eastern part of the district—the upper flow of the Obi and Irtysh—in the westerly direction towards Tiumen on the way to the markets of European Russia and Western Europe.

This is a great convenience, as it enables low valued goods to use cheap water transport over a considerable distance on their way to the markets.

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This waterway from the upper flow of the Irtysh,—along the Irtysh, Tobol and Toura—is 3392 versts or 2249 English miles long. From the upper flow of the Obi and Tiumen—along the Obi, Irtysh, Tobol and Toura —the distance is almost the same, namely 3338 versts or 2262 miles.

As drawbacks of the Siberian waterways must be mentioned the short period of navigation—from the end of April to the beginning of October—and the low water in the summer months from the middle of June onwards—which affect the greater part of the above mentioned rivers.

Low water is especially noticeable at the upper flow of the rivers: Obi up to the mouth of the river Charysh and during very hot and dry summers as far as the mouth of the Tom; Irtysh as far as Pavlodar; Tobol and Toura, especially in the most western section, where, toward the end of a hot and dry summer, water in shallow places is not deeper than 28 inches. This greatly affects steam navigation.

Of the rivers which are good only for very small craft and rafting, deserve mention the Omi, Tara and tributaries of the Obi—the Alei and Charysh, the latter being good in its lower course for steam navigation.

The water ways are not utilized to their full capacity, as may be seen from the fact that in 1913 on the entire Obi system there were afloat only 122 self propelling vessels and about 600 barges with an average carrying capacity of 60,300 poods or about 1,000 tons each.

The volume of goods traffic on all rivers of the Obi basin in 1909 reached 22,320,000 cwt., the annual increase for the years 1904-1909 being about 2.5%.

The Northern Route. The waterways of Siberia have an outlet into the Arctic Ocean through the Kara Sea. Until recently this route was used very little, and the Kara Sea was considered almost entirely impassable. The attempts and investigations of recent years have, however, shown that this route can be used provided aids to navigation are established and properly maintained, and wireless stations and seaplanes report on the movements of floating ice. This inspires a hope for Siberia soon to have a cheap sea route for exporting the produce of the country.

Railroads. The district is very poorly equipped with railroads. The total length of all completed and working railroads is only 3915 versts or 2635 miles, i. e. for each 1000 sq. versts there is 2.75 versts of railroad or 1.5 miles for each 1000 sq. miles.

These figures show that the district of the Siberian butter-making has proportionately 16 times less railroads than the United States, 4 times less than European Russia and 111 times less than Belgium.

All railways have about 125 stations, not counting switching tracks between the stations. As to the goods traffic on the railways within the district, the figures are given below.

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Unmade Roads. With such slight development in waterways and railroads, the natural roads acquire a great importance, which increases in winter time when the rivers and lakes freeze over and snow facilitates sleigh transportation. Winter is the busiest time of the year for goods traffic along the roads. In summer time the roads in the district are quite good, with the exception of those in the Altai mountain district. This locality is naturally uneven, has a moist climate and a great number of rivers and lakes.

Many roads, especially in the Southern part of the district, are fit for automobile traffic without any artificial improvements except the erection of a few bridges.

There are no stone jacketed roads in the district, owing to the absence of stone.

Before the war winter transportation by natural roadway was very cheap, namely 0.012-0.056 copeck per pood-verst, or about 0.134 c. per cwt.-mile.

Creamery of the Souskanikhin Co-operative Association (Govt. of Altai), Member of the Union

Main Occupation of the Population. The chief occupation of the population of the Siberian butter-making district is corn production and stock-raising.

Cultivated Area. There is not less than 5,600,000 desiatins (14,952,000 acres) of cultivated land in the district, which equals 4.65% of the whole

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area of the district or ten times less than in civilized countries of Western Europe and four times less than in 50 provinces of European Russia, populated by Russians.

Assuming that the percentage of land which is unfit for cultivation in the district is not higher than in other countries, and perhaps is even lower on account of the plain character of the larger part of the area, the above mentioned figures show that the capacity of the district for agriculture has been hardly tapped.

The average area of seeded land per head varies in various parts of the district. Near the northern boundary of the district, for example, in the district of Yalutorovsk the average area of seeded land per head is 0.87 desiatin, or 2.32 acres, and in the district of Kainsk, Government of Tomsk—0,74 desiatins (2 acres). The highest averages of sown land are found in the districts of Kourgan and Tiukalinsk, Government of Tobolsk, namely 1.15 desiatins (3.1 acres) per head, district of Kokchetav, Province of Akmolinsk, 1.26 desiatins (3.37 acres), districts of Barnaul and Kamen, Government of Altai—1.29 desiatins (3.4 acres), district of Zmeinogorsk, Government of Altai—1.5 desiatins (5.53 acres).

Plants Cultivated. The largest area—about 45%—is occupied by wheat. Oats take up about 35% of the area and the balance of about 20% is distributed among other plants—winter and spring rye, barley, millet, buckwheat, peas, flax, hemp, sunflowers, potatoes, and spelt. No other cereals or industrial plants are cultivated in the district except insignificant plantations of watermelons in the southern part of the district due south from 55 degrees north latitude.

In the district of Zmeinogorsk successful experiments have been made with the cultivation of sweet beetroot, and the construction of a big sugar refinery is contemplated.

The Methods of Agriculture. On account of the abundance and natural high fertility of the land, methods of agriculture, as applied in the district are extensive, and fertilization, whether with manure or artificial compounds, is not employed except by a very few individual farmers in the northwestern part of the district. The system of agriculture followed is that a plot of land is sown several years in succession, until it is exhausted, then left for five to ten years and in this way the earth recuperates its fertility. In more thickly populated localities, where the amount of available land does not allow this system of agriculture to be applied, the land is sown two or three years in succession and then left alone for a year, after which the planting begins again. Regular rotation of various crops on several fields is not employed in the district at all.

Tilling is done very carefully. Improved agricultural machines: ploughs, cultivators, hay mowers, harvesters, seed-lips, thrashing machines and winnowers are most popular, and the district is a large market for agricultural machinery and implements.

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Liubinsky Prospect in Omsk

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Obstacles to Improved Methods of Agriculture. Among the obstacles to greater advancement of the methods of agriculture, besides the abundance of land and still inexhausted natural fertility of the soil, must be placed the prevailing communal form of land ownership in the district.

Except for a few privately owned farms in the southern districts of the Government of Tobolsk, cossack land, and a few villages which adopted one-piece-privately-owned-farms-method, all the rest of the tillers in the district own their land on the principle of communal proprietorship.

Communal Land Ownership. Each family receives a plot of land, for temporary use or for an indefinite period, in proportion to the number of tax payers, or tillers, or males in the family. When changes in the composition of families and increase of population render the distribution of land unequal, a general re-distribution of land is arranged.

Hay meadows are divided each year with the observance of possible equality, pastures are in common use, woods are mostly exploited on the same principle, and the cutting of timber is also carried out on the principle of equal sharing. In some localities woods are divided in the same way as is the arable land.

This mode of land utilization, while guaranteeing to every member of the community a plot of land, at the same time hinders every improvement in the methods of agriculture to a considerable degree, as no one cares to spend money to improve land which at the next re-distribution may be taken from him.

Big agricultural properties of capitalistic character are exceedingly scarce in the district, as the high average prosperity of the population and the possibility for everybody to work his own farm almost entirely does away with the chances of finding a sufficient amount of hired agricultural labour.

Measures to Improve the Technique of Agriculture. The Government has been constantly taking measures to improve the technique of agriculture. Each Province or Government has an agronomical organization composed of specialists, instructors and people with technical knowledge in various branches of agriculture, whose aim is to acquaint the population with the best methods of utilizing the land. To prepare the members of these agronomical organizations there are several middle schools of agriculture, a college of agriculture in Omsk, and about ten preparatory schools of agriculture and of dairying.

Fertility. The fertility in the district of the Siberian butter-making, on account of the climatic conditions, is extremely uneven. In very dry years the soil sometimes does not yield anything, while in years when the amount of precipitation is sufficient, plentiful crops are gathered. The

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highest yield of wheat, barley and oats must be taken at 300 poods per desiatin, or 36.1 cwts. per acre, while a medium yield can be taken at 100 poods per desiatin, or 12 cwts. per acre.

Potatoes, which are seldom grown in the open fields, yield, according to the humidity of the summer, from 400 to 1000 poods per desiatin (48-120 cwts. per acre). The lowest yield (about 70% of the medium yield) is observed in the northern section of the district, in the region of woods and in the contiguous region of the wooded steppe, while the highest yields have been obtained in the southeastern region of the Altai, owing to this section being situated more towards the south, having a greater amount of annual precipitation and the soil being of higher quality. Large crops are gathered in the Kokchetav mountainous country, where there is, during the summer, a larger amount of precipitation than in the plains.

Causes Affecting the Crops. Drought does more damage to crops than anything else. Dry spells occur more often in the spring and during the first half of the summer. In dry years there appear enormous swarms of "Kobylka," an insect of the grasshopper family and very like a locust.

This "Kobylka" devours the crops and is a veritable plague for the agriculturist. Frequently crops are damaged by the spring and especially early autumn frosts, which kill the young plants.

Quantities of Agricultural Products. Notwithstanding the low standard of the technique of agriculture and low crops, the average harvest of corn in the district is much greater than is necessary for the local population, and the district annually exports a considerable amount of corn and other agricultural products.

Thus the Government of Tobolsk in the years of medium sized harvests has an excess of 20,000,000 poods, or 6,400,000 cwt. of corn, and in good years this surplus is doubled. The excess of corn in the Government of Tomsk and Altai, which have almost twice the population of the Government of Tobolsk, is considerably larger.

During the year 1916, there were sown in both these Governments 29,500,000 poods, or 9,500,000 cwts. of various cereals. The yield was 120,000,000 poods, or 39,000,000 cwts. The surplus available for export must be reckoned at not less than one third of the total, 40,000,000 poods, or 13,000,000 cwts. The provinces of Akmolinsk and Semipalatinsk produce yearly 60 to 100 millions poods or 19.3-32 million cwts. of corn.

Export of Agricultural Products. One can gather some idea of the amount of agricultural produce of the district from the figures supplied by the railway authorities. The latest figures available refer to the year 1915. During that year the railways of Western Siberia dealt with 61,818,127 poods, or 19,900,000 cwts. of wheat (in grain and flour), rye and oats invoiced for export to European Russia and abroad; also 2,039,954 poods, or

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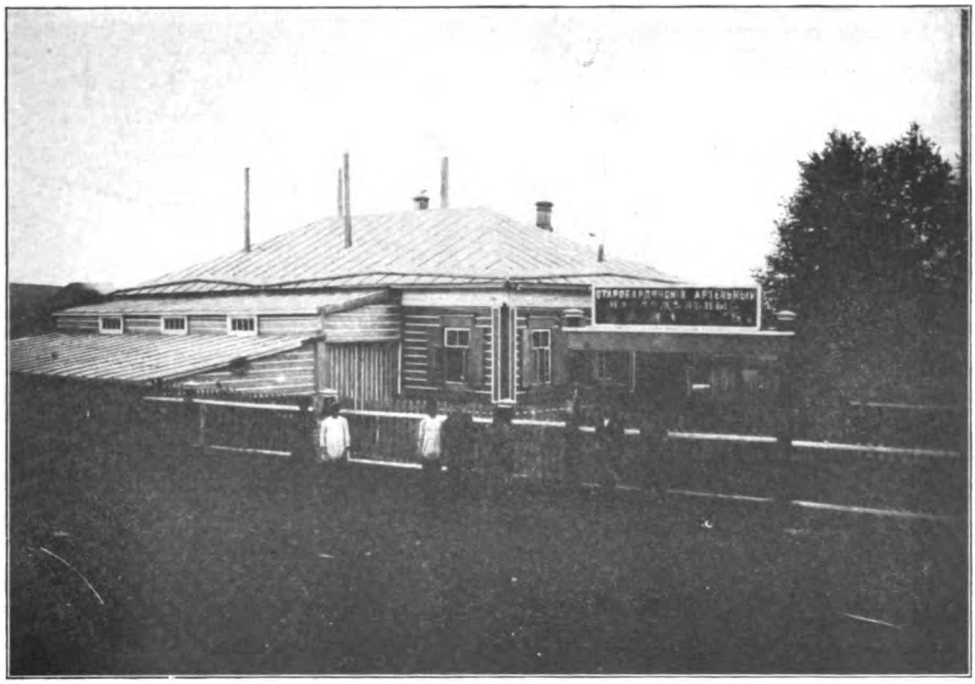
658,000 cwts. of bran; 706,223 poods, or 277,000 cwts. of oil yielding seeds, mainly linseed and hempseed; 745,466 poods, or 240,000 cwts. of flax and hemp fibre.

Stock Raising. Another source of prosperity in the district is supplied by stock raising, which occupies the second place.

The district of the Siberian butter-making industry presents many inducements to stock raising, having an abundance of dry and open steppes covered with nutritious, though not abundant feeding grass.

There is plenty of space both for grazing in the summer and for gathering fodder for the winter.



Creamery of the Staro-Barda Co-operative Association (Govt. of Altai), Member of the Union

The exposed situation and the constant winds do not allow blood-sucking insects to breed to the extent of becoming a plague to the live stock, as is the case in wooded localities.

The presence of saline soil is very useful, as the cattle like salt and greatly benefit by licking it.

In the southern and central parts of the district the nomadic Kirghiz allow their cattle to browse in the open the whole year round, as usually the snow is not very deep. In the eastern part of the district and near its southern boundary the presence of mountainous pastures is beneficial to stock-raising.

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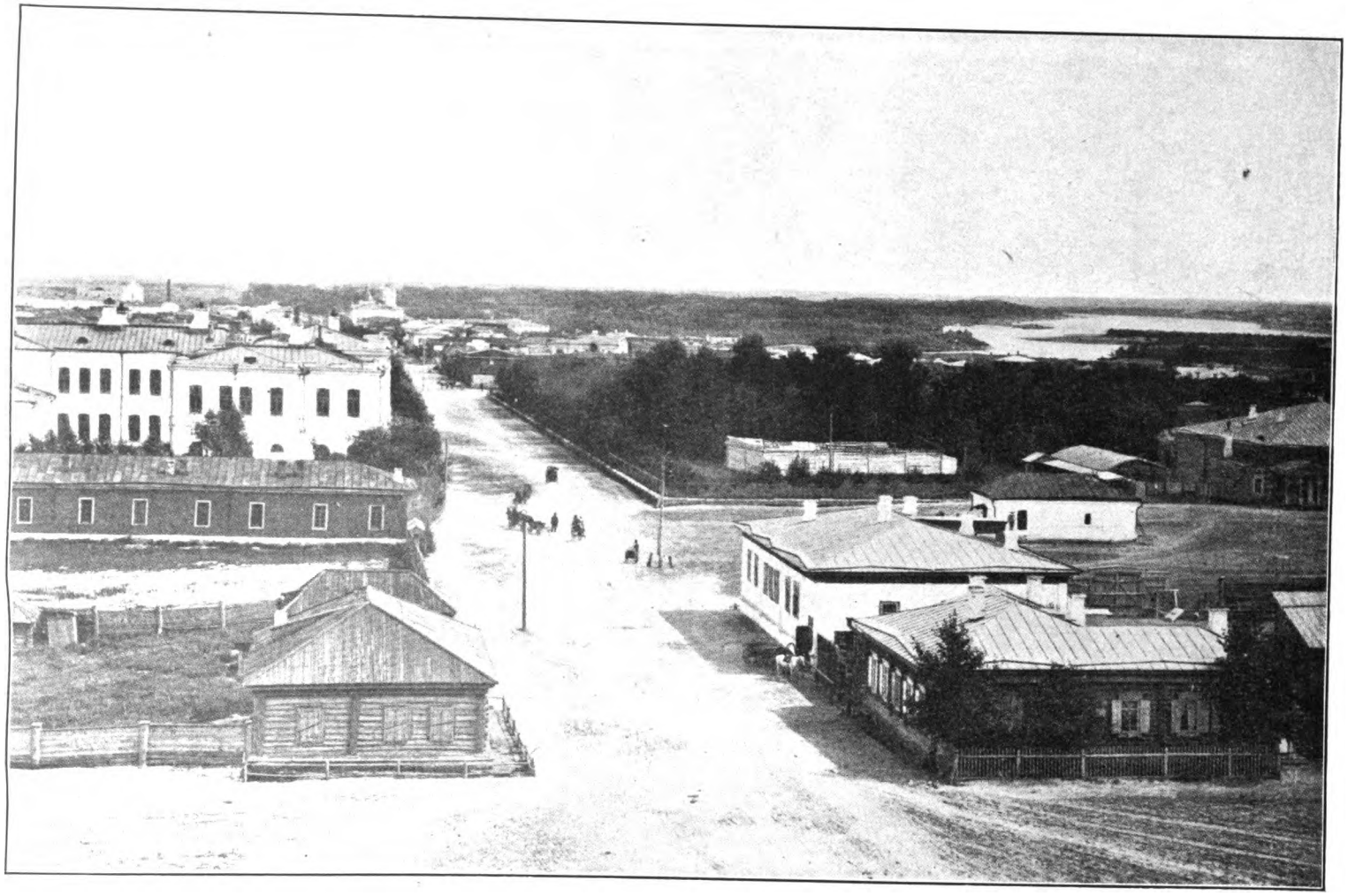

Semipalatinsk

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Unfavorable Conditions for Stock Raising. Among the circumstances that are unfavorable to stock raising are the very severe winters and rime, which occasionally occurs in the steppe region, when, during the winter, it begins to rain and immediately freezes up, the result of which is a layer forming a hard crust on top of the snow. The cattle are unable to get the grass from under this crust and die of hunger.

This rime is a great calamity for the nomadic Kirghyz and by it many of them are deprived of all their property. The acuteness of this evil has been greatly diminished since the introduction of hay mowers, which enable the owners to gather sufficient fodder for the winter even from the poor meadows of the steppe. Another calamity of the nomadic stock raisers is the great blizzards, which often destroy whole herds of cattle.

Russian and Kirghyz stock raising suffers equally from periodical droughts, during which, owing to the scarcity of fodder, it becomes necessary to cut down the number of cattle.

Murrains, especially rinderpest, which at one time did great damage to the Siberian stock raising, have been deprived of their power by the organization of veterinary assistance and now only sporadically an outbreak of anthrax, epizootic pneumonia or aphthae epizooticae occurs.

The Kirghyz Method of Stock Raising. The Kirghyz conduct their stock raising in a very primitive way: the cattle are herded in the fields the whole year round, very few of this tribe store fodder for the winter and when this is done at all, it is on a very small scale. Roofed or even walled winter premises for cattle are almost unknown. In order to feed the cattle in the open the whole year round, the Kirghyz are compelled to drive their cattle from the winter pastures, which are mostly selected near rivers and in the lowlands where the grass is longer and more plentiful—to summer pastures, preferably in the mountains or in the open dry steppes. The hardship of their existence reflects itself in the quality of the Kirghyz live stock.

Kirghyz horses are small and unsightly, but their endurance is extraordinary. The cattle are small and the cows yield little milk, as their calves are not weaned and only that amount of milk is collected which is left after the calf is satisfied. That is one of the reasons why butter making does not become a staple trade among the Kirghyz. Sheep and goats of Kirghyz breed are large and fat, but the wool is coarse. Kirghyz sheep have fat deposits on the tail which reach as much as 30 lbs. and are called "kourdiuk." A peculiarity of Kirghyz stock raising is the breeding of camels, a branch of stock raising not practised by the Russians.

Russian Stock Raising. Russians, who own much more live stock in the district than the nomads employ better methods of stock raising, though these methods are far from being perfect.

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Fodder is laid in store for the winter, but very often even milch cows are fed on straw the whole winter.

Cattle are kept in special enclosures, which are mostly cold, often unroofed, and at best have roofs of very light construction.

Siberian Live Stock. No grass or zhizocarpic plants are sown and therefore the feeding of cattle is not quite satisfactory. Owing to this, the cattle of the Siberian peasantry are smaller and less productive than those of improved breeds of European Russia, but at the same time they require much less care, and possess a greater power of resistance against disease.

Besides this, the Siberian cattle are capable of great improvement with the least betterment of care and feeding, and this capacity constitutes a valuable asset for the stock owner.

The Siberian horse is small, but capable of great endurance. A continuous run at the rate of 15 versts per hour (17 kilometres or 10 miles) for two or three hours, or a journey without food and with a short rest for 100 versts (114 kilometres, or 66 miles), is a common occurrence.

The Siberian cow yields less milk than the cultivated breeds. One can judge the milk productiveness of Russian Siberian cattle from the following: according to the exact data, for ten years, collected by the Government organization which controls butter-making, in the Government of Tobolsk, the average amount of milk from a cow supplied to butter-making works was 49 poods, or 1770 lbs. At the same time this figure does not express the average milk yield of cows, as a considerable part of the milk is consumed by the owner's family.

In practice a peasant's cow yields from 1800 to 3600 lbs. of milk.

On the Kainsk farm of instruction, where Siberian cattle are fed rationally and are well cared for, the average yield of milk per year was 106 poods (3816 lbs.), while the highest individual annual yield was 168 poods or 6048 lbs.

While not amounting to great quantities, the milk of Siberian cows is distinguished by its high percentage of fat, averaging 4.5%, and even 7.6% has been observed. The cattle of western Europe usually have no more than 3.5% of fat in their milk.

Sheep of Russian breed are not so fat as those of the Kirghyz, have no "kourdiuk" and their wool is much finer and softer.

Sheep Breeding and Its Future. Dry pastures, herbs, nutritious though small, and the abundance of saline soils are conditions especially favourable for the development of sheep-breeding in the district of the Siberian butter making.

The country due south from the district, spreading to the boundaries of Turkestan, exceeds in size the butter-making district and even with the

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development of the agricultural technique, can be used almost exclusively for pastures and especially for sheep raising.

The cultivation of land in this locality is possible only with the aid of artificial irrigation, and this can be done only in a few places.

The whole locality gravitates economically toward railroads which cut through the butter-making district in Siberia.

As long as sheep-raising was in the hands of peasants and the Kirghyz, who required from the sheep only mutton, wooled skins for winter wear and coarse wool for felt boots, stockings, mittens and linings, the sheep-rearing did not yield big profits and could not develop quickly.

However, experience of recent years proves that fine-wooled sheep (merino) can be bred in the Siberian steppes with the greatest success.

Some sheep-breeders in Southern Russia, where their trade was threatened by the growing wheat industry, transferred their herds to the steppes of the Province of Akmolinsk. This experiment has been eminently successful and in 1913 there were in the Province of Akmolinsk more than 38,000 merino sheep. In the same locality, the breeding of Karakul sheep, which were brought from Turkestan, has also been very successful and in 1913 the number of these animals whose fur is so valued, reached 23,000. The war has suspended this useful trade, but there is every reason to expect a great development in the breeding of Karakul sheep when conditions become peaceful again.

Stock Raising in Figures. The following table shows how stock raising in the Siberian butter-making district compares with other countries and localities:

Countries and Provinces of Western Siberia	Number of animals per 100 people				
	Horses	Cattle	Sheep & Goats	Pigs	Camels
U. S. A.	21.5	59	50	65	
Entire Russia	26	34	48	10	
Denmark	25.1	88.8	18.6	90	
Govt. of Tobolsk	40	48	35	158	
Govt. of Tomsk	57	67	77	15	
Province of Akmolinsk	112	100	330	1	16
Province of Semipalatinsk	100	102	209	4	

From the above table one can see that in the butter-making district stock rearing is greatly developed, but the limit of its development is as yet far from being reached.

When certain improvements which are accessible to the population are introduced, such as fully developed grass sowing, cultivation of forage plants, improved feeding and winter housing of cattle, increase in the number of hay mowing machines, development of means of communication and

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Petropavlovsk, Government of Akmolinsk

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of utilization of animal products, all of which is bound to raise the prices for cattle, stock raising must develop still more and it is difficult to foresee the extent of its development.

In addition to the above, there are in the district of the Siberian butter-making and in the adjacent localities, projected new railways totalling about 3,000 versts, or 2,000 English miles.

These new railways are shown on the attached map. They promise to invigorate the Southern section of the butter-making district, which is well suited to stock raising and enormously rich in minerals such as coal, copper, silver and lead. No doubt the new railways will facilitate expansion of the Siberian butter-making district in the southern direction by providing means for export of cream butter to the distant markets.

Measures to Improve Stock Raising. The Government, Zemstovs and the Union of the Siberian Creamery Associations do much to spread theoretical and practical knowledge of improved methods of caring for cattle, especially with regard to warm stock yards and proper feeding, and as a result of this propaganda marked improvements have been observed in the more civilized northwestern part of the district and also in other localities. In many villages of the district of Kourgan and Yalutorovsk, the peasants appreciate the usefulness of warm stock yards and energetically construct them. To make the peasants realize the profitableness of improved feeding and tending of milch stock, the Union of the Siberian Creamery Associations employs a staff of agronomic specialists and spends considerable sums of money on special establishments to demontrate the perfected methods.

Export of Products of Stock Raising. At present a considerable amount of the products of stock raising, besides cream butter, export of which will be discussed later, is exported to European Russia, Eastern Siberia and abroad.

Previous to the war, there were brought on foot each summer, from the south to the towns of Omsk, Petropavlovsk, Kourgan, Cheliabinsk, Troitzk and Ekaterinbourg, 360,000 heads of cattle and 200,000 sheep. Of this amount about 100,000 cattle were sent by rail to Petrograd, and the rest slaughtered and sent to Moscow and Petrograd as frozen meat.

These cattle were all bought from the Kirghyz and came from the steppe regions.

In the Government of Tomsk, Tobolsk and Altai, where butter-making is especially developed, there were slaughtered each autumn about 300,000 surplus cattle and an equal number of surplus sheep.

During the whole winter, along the main Siberian railway, there moves an increasing flow of meat from east towards west.

Commencing east of Novo-Nikolaievsk, a stream of meat reaches this town amounting to about 300,000 poods (data for 1913) and leaves it in-

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creased by local contributions to about 900,000 poods. At Omsk the inpour of meat already amounts to 1,500,000 poods, while through Cheliabinsk there passes approximately 2,500,000 poods (806,000 cwts.).

According to the report of the Omsk railroad for 1915, there passed through all the stations of the railroad, mostly westbound, 39,128 cattle on foot, and 2,980,571 poods, or 960,000 cwts. of frozen meat, tallow and hides.

Export of Hides, Wool, Hair and Bristles. Products of animal industry other than meat, were exported from the district of the Siberian butter-making industry and also from the neighboring localities which gravitate to the district, according to the Government Veterinary organization, in the following quantities: horse and heifer hides, 3,210,000; goat and sheep skins, 9,950,000; camel hides, 28,000; sheep and goat wool and hair, 1,730,000 poods, or 558,000 cwts.; camel hair, 86,000 poods, or 27,692 cwts.; bristles, 15,857 poods, or 5,106 cwts.; horse hair, 56,124 poods, or 18,072 cwts.

In addition there were exported from the district by railroad in 1915: eggs, 86,960 poods, or 28,050 cwts.; killed domestic poultry, 45,563 poods, or 14,671 cwts; killed winged game, 31,291 poods, or 10,076 cwts.

Agriculture and stock raising are the chief occupations of the population of the district of the Siberian butter-making industry.

A few lightly developed manufacturing industries exist in the district. These are closely connected with agriculture and stock raising, and have for their materials almost exclusively the raw products of these two mainstays of the district prosperity.

Mining Industry. Within the boundaries of the district hardly any minerals are worked. Of mining concerns, coal mines deserve mention. These are the coal mines near the town of Cheliabinsk, the Anjer coal mines near the northwestern boundary of the district, close to the railway, belonging to the Government, and the Soujen coal mines (private) which supply coal to the railroad.

Coal mines are being worked in the district of Kouznetzk, between the upper flows of the river Ina and Tom, near the village of Kolchougino, which is connected with the Tomsk railroad by a branch line running from the station Iurga.

Silver, copper, lead and precious jasper mining, which at one time throve in the Altai, has now almost ceased since the abolition of serfdom, as the once miners reverted to the more customary work of agriculture.

Manufacturing Industry. Of industries connected with husbandry, the most developed are milling, distilling, brewing and butter-making The least developed are leather making and tanning of wooled sheep skins,

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felting foot wear and pressing oil of hemp seed, linseed and garden cress seed (Camelina Sativa).

Domestic Industries. Tanning, oil pressing, preparation of wooled sheep skins and felting foot wear as domestic industries are popular in the region inhabited by the Russians. An artisan who has a small workshop, generally of a most primitive construction, usually executes orders for the neighbouring peasants. Only in two places, in the town of Barnaul and the village of Shatrovskoe, the district of Yalutorovsk, has the preparation of black sheep furs and fur coat making become an industry on a larger scale. The same can be said of felting foot wear, which is carried on in the town of Barnaul and near the town of Kourgan. Oil pressing has somewhat developed near the latter town with the aid of hydraulic presses.

All these industries are worked for the needs of the nearest local markets and it is impossible to ascertain the exact volume of their production.

Flour milling, distilling, and brewing are industries on a larger scale.

Milling Industry. According to the development of the flour milling industry in the district, the list is headed by the town of Omsk, followed by the towns of Novo Nikolaievsk and Tomsk. The last named, though situated outside the district, grinds grain contributed by the district.

The secondary centres of the flour milling industry are, in the Obi region, the towns of Barnaul, Biisk, Kamen and in the basin of the Irtysh, —Semipalatinsk, Pavlodar, Kourgan and Yalutorovsk.

Previous to the war the annual output of the flour mills in the Obi region was calculated at 15.8 million poods, or 5.1 million cwts., and that of the Irtysh region at 8.9 million poods, or 2.9 million cwts. The flour mills worked not only for local markets, but also for exportation; up to 75% of flour produced in Novo Nikolaievsk was exported to western Siberia, while about 50% of the flour produced in Omsk went to European Russia, mainly in the Urals region.

Distilling and Brewing. In 1910-1911 there were 28 distilleries in the district, with a total output of 3,000,000 vedros, or 8,115,000 gallons of alcohol 40° strong. At the same time there were 40 breweries in the district, with a total output of 1,450,000 vedros, or 3,922,250 gallons.

Textile industry is not worked on a large scale and the peasants make fabrics by hand of hemp, flax and wool for household use.

Butter-making. The most conspicuous branch of the manufacture of raw products of agriculture, which gives considerable profits to the peasantry and occupies a prominent place in exports abroad is butter-making—the trade of the district.

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Manufacture of Melted Butter Previous to the Construction of the Siberian Railway. Manufacture of butter for sale has long since been a fairly conspicuous trade of the peasantry in the district. Owing to the absence of convenient ways of communication and the great distances which rendered transportation of perishable goods impossible, only melted butter was manufactured, by means of liberating water and albuminous matters by heating. This butter keeps fresh, even in summer time, for a much longer period than that made in the ordinary way. It is used only for cooking purposes.

This butter was made by souring milk in earthenware vessels—"krynki," separating the "smetana" or thickened cream and converting the cream into butter by prolonged stirring with a churn staff—"moutovka." The butter was then put into a moderately warm oven and when melted was poured off from the water and other occasional foreign matter at the bottom of the vessel.

Cylinders of frozen butter—"chalpany" as the Siberians call them—could be seen at every village market and fair, and jokingly the peasants of the Government of Tomsk are often called "chalpany." At that time bread and meat were extremely cheap and the peasants could obtain money only by selling butter, but the trade was not remunerative. From 30 poods of milk hardly one pood of melted butter could be obtained, the price of which was 4 to 6 roubles per pood, or $6.30 to $9.15 per cwt.

Butter-making as described above required much work on the part of the housewife.

Melted butter was bought from peasants, mainly at village fairs during the autumn and winter, gathered into large lots, melted once more to assure the necessary degree of purity and transported by horses to European Russia and was shipped to Turkey through the ports of the Black Sea.

Melted butter, prepared in the Government of Tobolsk, where the population is more cultured and much cleaner, was rated as first class. Barnaul butter, from the present Government of Altai, was rated second class. The butter made by Kirghyz, from the Governments of Akmolinsk and Semipalatinsk, was rated third class.

An approximate estimate shows that the annual export of melted butter from Western Siberia was not more than 350,000 poods, or 112,700 cwts., for not more than 2,000,000 to 2,500,000 roubles, or $1,000,000 to $1,250,000. Cream butter was in use only in towns where it was made at home by churning cream in bottles. The mechanical method of separating cream, as well as the word "separator," were unknown.

First Experiments in Making Cream Butter. Only in recent years, before the construction of the Siberian railway, a butter factory was organized on the private farm of Mr. Pamfilof, and a separator was installed. However, this butter factory made a very small quantity of butter, as only

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the milk from the owner's cows was used, and was disposed of entirely in Tiumen.

The beginning of the Siberian butter-making industry corresponds with the commencement of the construction of the Great Siberian railway.

Butter-making and the Railway. In 1893 the railway reached the town of Kourgan and in 1894 the first butter factory was organized in the village of Utiatzkoe, 40 versts, or 26 miles from the town of Kourgan, by a Moscow merchant, Mr. Volkoff. Since then the butter-making has been advancing by gigantic strides. In 1899 there was exported from Siberia 132,000 poods, or about 44,000 cwts. of butter, and in 1913, 4,058,650 poods, or 1,309,000 cwts.

Siberian Butter. The increase in the export of Siberian butter was greatly assisted by its quality, mainly its keeping quality.

The numerous analyses made in laboratories of the States of Western Europe show that the average composition of **European butter,** according to Professor Konih, is as follows:

water	fat	salt	curd
13.45%	83.70%	1.59%	1.26%

The composition of salted **American** butter (Thomson, S. C., Shaw, R. H. & Norton, R. P.—The normal composition of American Creamery Butter, U. S. Dept. of Agriculture. B. A. I. Bul. 149), is as follows:

water	fat	salt	curd
13.90%	82.41%	2.51%	1.18%

The investigations of the Siberian Government laboratories (S. Kochergin, Analytical Tables of the physical-chemical properties and compositions of Siberian butter for the years 1896-1912) show that the average composition of **Siberian** butter, after complete analysis, is as follows:

water	fat	salt	curd
11.58%	85.59%	1.71%	1.12%

Comparing these three tables, one can see that Siberian butter contains 1.87% less water and 1.89% more fat than European butter.

The small amount of water, in comparison with European and American butter, gave Siberian butter the name of "dry butter." This dryness is its peculiar feature, while it also contains the largest percentage of fat, which is the most valuable component part of butter.

Growth of Butter-Making. Numerous butter factories sprang up very quickly. The first appeared in 1894, and in 1902 there were, in Siberia, 2,135 butter factories, and 3,102 in 1911.

Having originated in the southwestern part of the Government of Tobolsk, near the town of Kourgan, the butter-making soon spread east-

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ward to the Government of Tomsk and the Province of Akmolinsk. The first butter factory in the Government of Tomsk appeared in 1896, but in 1902 two thirds of the total number of butter factories in Siberia were in the Government of Tomsk.

Organization of Butter Making by Private Persons. The manufacture and exportation of Siberian butter were at first entirely in private hands. Buyers and exporters of butter, mostly Dutch, opened offices in towns and supplied with equipment, on credit, anybody who desired to organize a butter factory. They even loaned money against an undertaking to deliver butter to them and repay the loan by deducting from the prices of the delivered butter.

These people also recommended master butter makers, who were mostly natives of the Baltic provinces, where the butter-making industry was already well developed.

The new trade proved remunerative: milk was priced much higher than in the epoch of melted butter making, while the work of the housewife was confined to milking her cows and taking the milk to the factory. The annual profit from a cow rose from 5 to 6 roubles to 15 to 20 roubles.

Faults of the New Business. This business attracted many rich peasants and small merchants, who vied with each other in starting new butter factories. The main object was to purchase milk as cheaply as possible. To reduce the competition, the owners of butter factories often made agreements among themselves as to the prices and divided the country in sections. To make the purchase of butter still more profitable for themselves, they opened small stores and paid for butter in goods.

Previous to the year 1899 butter was transported by railroad in ordinary cargo cars without any means of refrigeration. Owing to this, in the summer time when the exportation was at its highest, butter suffered great damage before reaching the market. The buyers-exporters did not attach any importance to this fact, and took no trouble to improve it.

The buyers of butter in their relations with the owners of butter factories, and particularly the owners of butter factories in their relations with the peasants who delivered milk, employed most unscrupulous methods.

The result was the production of bad, low-priced butter and the lion's share of the profits was taken, not by the producers of milk, but by the middlemen.

Production and disposing of butter were not regulated nor organized, thereby doing injury to the great majority of producers and bringing profits to a small crowd of butter factory owners and exporters.

The business bore all features of a dishonest exploitation by clever and unscrupulous dealers of the peasants' credulity and ignorance.

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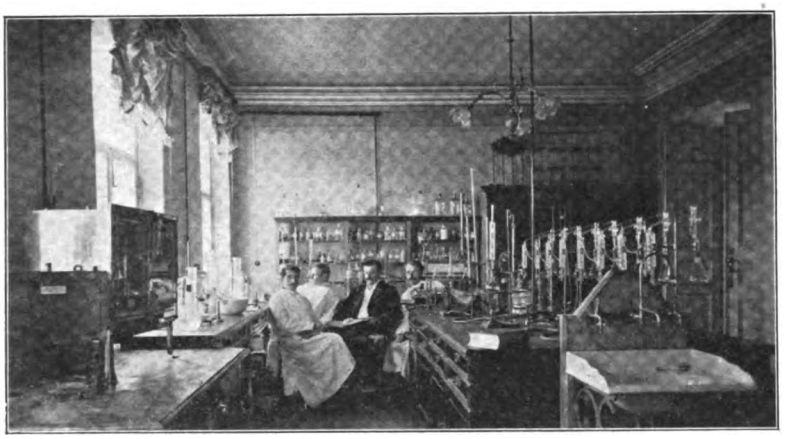
Government's Attitude Towards Butter-Making. In 1905 the Government, in the effort to develop and organize the new branch of the people's activity, so beneficial to the State, sent a number of specialists and instructors in dairying to Western Siberia, who were under the Government's agronoms—Mr. N. Skalozubof in Tobolsk and Mr. Jos. Okulitch in Tomsk.



Central Dairying Laboratory in Tomsk

Later on, to study and control the production of butter and to supply artificial ferments to various parts of Western Siberia, there were organized in many places special dairying laboratories, headed by the Central Dairying Laboratory in Tomsk under the management of an agriculturist, Mr. C. Kochergin, who has since been a member of the Board of Directors of the Union of the Siberian Creamery Associations.

However, it must be stated that in Perograd many influential people in administrative circles did not approve of the new industry, regarding the butter-making by the Siberian peasantry as a rival to the butter-making by the landlords of European Russia.

This is one of the reasons why the local activities of the Government agents were not put on a proper footing. There were founded some co-operative butter factories, but the increase of their number was arrested by the persistent and active opposition of private interests. In 1902, of all the butter factories in the Government of Tobolsk, 95% were privately owned, 3% belonged to communities and 2% to the co-operative associations. The first hundred refrigerator cars for transportation of butter were obtained as late as 1899.

A. N. Balakshin. Such was the state of the business when Mr. A. N. Balakshin took part in organizing it.

Mr. Alexander Nikolaievich Balakshin, the founder of the Union of the Siberian Creamery Associations, has been one of the most conspicuous

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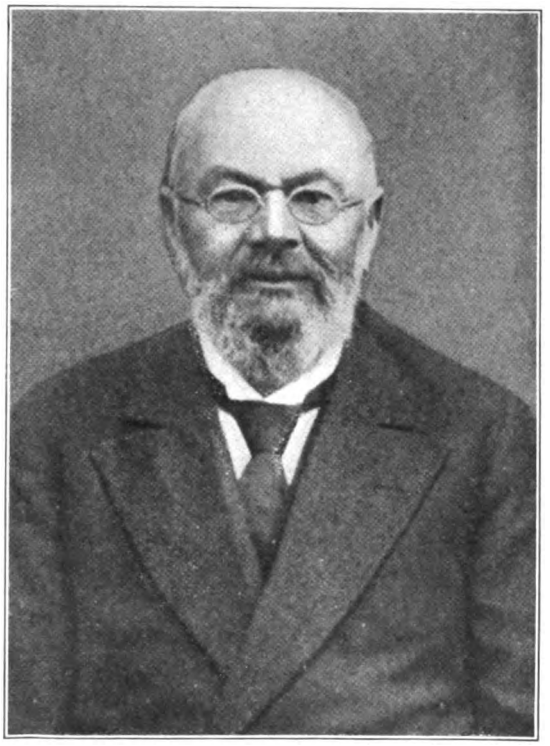
and respected public men in Siberia and one of the most active organizers of the co-operative movement in Russia.

His father was a flour miller and merchant in the town of Yalutorovsk and a descendant of the old-timers, the peasants of the district of Tobolsk, who were the first colonists of the country, which was conquered by the cossack chief—Ataman Ermak.



A. N. Balakshin, Founder of the Union

Mr. Balakshin in his young years was under the beneficial and enlightening influence of the "Dekabrists" (Decemberists), who resided in Yalutorovsk, having been exiled to Siberia for the attempt at revolution in December, 1825. They were the best educated and most humane people of the then Russia, and wherever they lived they left behind the trace of their noble influence.

Mr. Balakshin's father was on good terms with the "Dekabrists," and under their influence educated his son at the University, which in those times was an extremely rare occurrence in the merchants circles.

After his graduation Balakshin, junior, did not follow the usual path of the Russian University man and did not enter the Government service. He decided to be productive and independent in his work. After several

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unsuccessful attempts he at last organized a potato-trickle works near the town of Kourgan, which, under his good management, enabled him to lead a modest life.

Being in constant touch with the common people, Mr. Balakshin learned thoroughly their life and needs, and won general respect for his open character and readiness to help.

The appearance of a new trade, which promised to be profitable for the peasantry, could not fail to attract the attention of such a responsive person as Mr. Balakshin, whose character so happily united the idealists aspirations with sober understanding of the real and the capacity to carry to the end any task undertaken.

After studying the new trade and learning the practical part, Mr. Balakshin arrived at the conclusion that, in order to safeguard the milk producers against unscrupulous exploitation by the private owners of butter factories, it was necessary first to organize the business on co-operative principles, and second, to remove from connection with the selling of butter the unnecessary middlemen, represented by the buyers-exporters, and, third, to bring the consumer closer to the producer by organizing co-operative disposal of butter abroad.

The Attempt to Eliminate Foreign Exporters. The first attempt to organize the sale of butter abroad was made in 1901.

The Moscow Agricultural Society, the Kourgan section of which Mr. Balakshin was the chairman, founded an agricultural association which was joined by five butter-making associations and by some private butter factories with a total output of butter of about 77,000 poods (about 25,000 cwts). But this association very soon ceased to exist.

In the same year, Mr. Balakshin read a report about the necessity of organizing the making of butter on co-operative principles, at the Congress of butter makers, held in Kourgan. This report was energetically supported by the Government Agronomist, Mr. Joseph Okulitch, (now the general manager of the Union of the Siberian Creamery Associations for abroad) who pointed out to the Congress the necessity of establishing a direct connection between the co-operative organizations of Siberia and the consumers' organizations in England.

Special Organization to Introduce the Co-operative Principles in the Butter-Making Trade. Having thus prepared the ground in Siberia, Mr. Balakshin came to Petrograd in 1902 to secure the assistance of the Government for the proposed undertaking—the organization of co-operative butter-making.

He was fortunate enough to enroll the interest in the venture of the noted statesman of the period, A. S. Yermoloff, the Minister of Agriculture, with his profound knowledge of agriculture, and the well known count S. J. Witte, the Minster of Finances.

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Mr. Balakshin presented to them his scheme to organize the butter factories on the co-operative basis. He offered to head the special organization and requested only 7000 roubles to cover expenses and remuneration of the agents.

His scheme was approved, the money forthcoming and credit was opened to advance money for construction and equipment of the new co-operative butter factories. In the summer of 1902 the new organization commenced its activities.

The activity of the new organization embraced: a) investigation of the existing butter-making industry both in the producing and selling branches, b) composition of schemes and estimates of butter factories for various amounts of milk, c) energetic propaganda of the idea of co-operative butter factories by means of oral consultations with the peasants at their villages, d) finding and recommending of experienced master butter makers for the new co-operative butter factories, e) advancing money up to 3,000 roubles ($1,500) per each factory from the money granted by the Government, for the erection and equipment of new butter factories, f) instruction in butter-making and bookkeeping of a butter factory.

The organization had its seat in Kourgan, the cradle of Siberian butter-making, but its influence spread over the whole present district of the Siberian butter-making industry.

Results of the Organization's Work. The success of the work of the organization was extraordinary. With meagre financial means, the organization, thanks to the exceptional energy of its leaders, combined with profound knowledge of the population and the ability to choose the most suitable people, during the five years of its existence opened 273 co-operative butter factories with a membership of 52,000 heads of households. The output of butter from the butter factories united by the organization during the last year of the organization's existence reached 428,000 poods or 138,000 cwts, valued at more than 5,000,000 roubles.

The activity of the organization was an object lesson for the population in the remunerativeness of co-operative butter-making, and in that respect the work of the organization was eminently successful, resulting in a rush of peasantry to organize co-operative butter factories. Their number grew quickly and in 1911, of all butter factories in Western Siberia, 66% were co-operative and only 34% were private concerns.

In 1917, out of the total 2,466,164 poods of butter produced in Siberia and delivered to the Russian Government, the share of private butter factories was only 483,485 poods, or less than one-fifth of the total.

Unionization of Co-operative Butter Factories. However, the conversion of private concerns into co-operative factories was only half of the reorganization. One useless middleman, the owner of a private butter factory, was removed from the trade, but the export and sale of butter

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still remained in the hands of middlemen—private enterprising persons, exporters, mostly foreigners. These agents of big foreign butter trading houses were concerned only with buying as much butter as possible as cheaply as possible. They did not care about the quality of the butter, as butter of any kind could be sold abroad at a price corresponding to the quality.

It is necessary to state that the exporters, armed with all means of European commercial technic, large capital, having the closest connections with the European market and acting in concert in maintaining low prices for butter, were a very large force, the struggle with whom was very difficult. They stood like a wall between the Russian producer and the foreign consumer and effectively resisted all attempts to establish direct connection between the two.

The only means of liberating the Siberian butter-making industry from the power of the exporting houses and in this way improve the quality of the product and the remunerativeness of the trade, was the foundation of a powerful organization uniting co-operative associations, which would be able to successfully compete with the foreign exporters.

Mr. Balakshin decided to organize the butter-making associations into a Union.

Founders First Meeting. The first meeting of the founders of the Union was held in Kourgan, November 10th, 1907. There were present at this meeting the representatives of twelve co-operative associations, which formed the Union and began their activities in the following year—1908.

Aims of the Union. Besides the twelve co-operative butter-making associations, a co-operative store of one of the factories joined the Union and in this way the Union, from the very outset became not only a Union of co-operative associations of producers but also a co-operative association of consumers. **The Union still preserves these features, catering for the two most important needs of the rural population: disposing of the most valuable product of agriculture, namely butter, and supplying the goods that are most needed.**

Among other things the Union aimed at providing for the butter-making associations various goods and stores, necessary for the trade, such as barrels, parchment paper, salt, matting for packing, lubricants for separators, etc., and also manufacturing raw products of agriculture and furnishing goods necessary for the peasantry.

Peculiarities of the Union's Charter. When drafting the Union's Charter, which was approved by the Government, a special effort was made to impart a particular stability, permanency and credit to the Union. For these reasons it was made obligatory, under penalty of a fine, for unionized associations to conduct their business, so far as the sale of the products of

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agriculture and of local trades and the purchase of manufactured goods and machinery were concerned, exclusively through the Union.

For the same reason each association was made liable in respect to all obligations to the extent of 50 copeks (25 cents) per each pood of butter delivered to the Union by the association during the previous year.

The two above mentioned peculiarities put the Union at once among the stable and financially reliable organizations.

As one can conclude from the description given of the Union's aims, the Union endeavors to satisfy the most important needs of the population of Western Siberia. One of the most pressing of these was the organization of butter selling—the chief source of the peasants income. Another was the necessity of providing the peasants with various goods, as obtaining goods through the rural storekeepers and the owners of private butter factories was extremely unprofitable for the people.

How far the Union attained its object and how much the population appreciated its activity can be seen from the figures showing the gradual growth of the number of the unionized co-operative associations, the amount of butter collected by the Union, and the extent of their operations in goods.

Speedy Growth of the Union. Commencing with the second year of the Union's existence, the number of co-operative creameries and shops, members of the Union, begun to grow quickly and steadily, and there has been no falling off since, nor any decrease in the annual number of new co-operative associations which joined the Union. The number of co-operative associations and shops in the Union for each year is shown in diagrams Nos. 1 and 2.

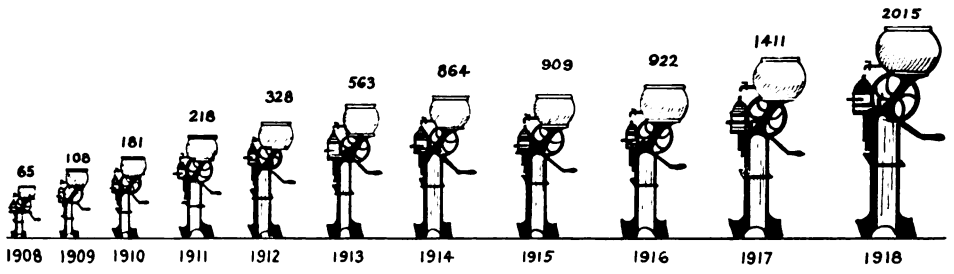

Diagram No. 1. Growth of Creamery Associations in the Union

Increasing Number of Co-operative Associations in the Union. The number of the co-operative associations in the Union has been continually growing, and reaches at present 4357. At the most conservative estimate, assuming that each co-operative association comprises only 150 heads of households, the Union comprises in all its associations not less than 650,000 heads of households, or about 3,500,000 souls, which is more than 42% of the district of the Siberian butter-making industry.

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These figures bear eloquent testimony to the fact that the Union really caters to the important needs of the country, and that the people highly appreciate the Union's work.

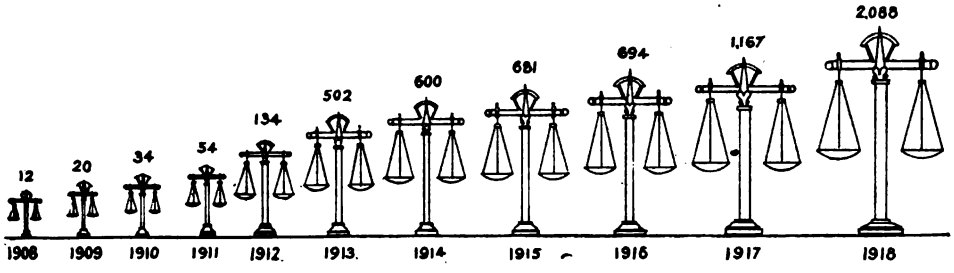

Diagram No. 2. Growth of Distributing Stores of the Union

Increase in the Number of Branches. At the beginning the office of the Union's board in Kourgan was the only point where the butter and other products were collected and from which goods were distributed. This soon proved insufficient, as co-operative associations and shops from remote districts joined the Union and it was very inconvenient for these new members to deliver butter and obtain goods in Kourgan. This prompted the Union to establish branches and offices, at first in the neighboring towns and later in remote cities all over Western Siberia.

The gradual growth of the number of the Union's branches is shown in the following table:

Years	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Number of Offices	2	3	5	5	7	11	16	16	17	22	25

Not one of the offices opened during the 11 years, has been closed or transferred, which shows the stability of the Union's business.

At present the Union of the Siberian Creamery Associations has its offices at the following points: Troitzk, Cheliabinsk, Yalutorovsk, Ishim, Kourgan, Petropavlosk, Tiukalinsk, Tara, Nazyvaievsk, Omsk, Tatarsk, Chany, Koupino, Slavgorod, Kainsk, Novo-Nikolaievsk, Kamen, Barnaul, Biisk, Ust-Kamennogorsk, Roubtzovka, Semipalatinsk, Ust-Charysh and Kalachinsk. The Union also has agencies in the villages of Aleiskoe, Omoutinskoe, Choulyma, Cherepanovo, Shelabolikha, Sorokino, Mishkino, Makushino and in the town of Koustanai.

The Union's associations, branches, stores, and offices are spread over

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the great expanse of the above described district of the Siberian butter-making industry.

The Wholesale Stores. To all offices of the Union are attached wholesale stores, which supply goods to those shops that are members of the Union. The position of offices in the territory of the Union is shown on the attached map.

About 9½ million poods of butter was handled by the Union during its existence, out of a total of 36,000,000 poods exported from Siberia for the same time.

Amount of Butter Received by the Union. In spite of all difficulties connected with the struggle with the foreign exporters, the Union gradually increased not only the absolute quantities of the butter received and exported by the Union, but also the proportionate relation to the total export of butter from Siberia, as shown by the following table:

Years	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Export of butter from Siberia in thousands of poods	2840	2980	3195	3848	4047	4442	3285	4612	3174	3521
Amount of butter that passed through the Union in thousands of poods	130	190	270	280	480	630	678	1303	2942	2514
Proportion of butter that passed through the Union to the total export of butter from Siberia (Percentage)	5	6.3	8.4	7.5	11.8	14.2	20.6	28.2	97.7	71.4

One can see from the above table that as early as 1915 more than 28% of the total Siberian butter was passing through the Union while in 1916 and 1917 this percentage reached 97.7% and 71.4%. In these years almost all butter produced in Siberia was taken over by the Government through

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the offices and stations of the Union. The gradual increase in the amount of butter received by the Union can be seen from diagram No. 3.

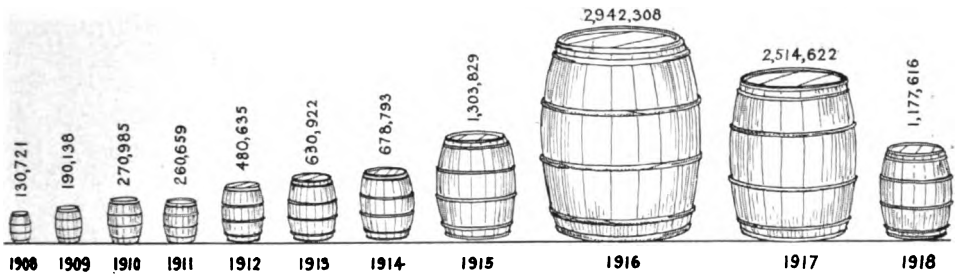

Diagram No. 3. Receipts of Butter in poods (1 pood equals 36 lbs.)

The value of butter received by the Union increased year by year as is shown by the following table:

Years	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Value in thousand roubles	1800	2416	3581	3795	6064	7405	7851	16349	58349	123163

It can be seen from the above table that the operations of the Union in butter, commencing at the small sum of Rbls. 1,800,000 in 1908, reached the sum of Rbls. 123,163,000 in 1917.

Sale of Butter Abroad. The Union found it very difficult to attain its chief object—that of selling butter to foreign markets with as few middlemen as possible—but at length this problem was solved successfully.

In the first year of its activity, in order to sell butter to the leading butter market—England—the Union of the Siberian Creamery Associations made an agreement with Messrs. W. and R., who undertook to buy the Union's butter at Siberian prices with the addition of the cost of its delivery to London.

In 1909 the business of Messrs. W. & R. was taken over by Messrs. L. & Co. who at first purchased butter from the Union on the same terms.

Later the Union delivered butter to Messrs. L. & Co. to be sold on commission on the terms of equal sharing of profit and loss.

The Union contributed toward the maintenance of the office 2.5% of the value of butter delivered and had the right to control the sale of butter in England. It was also entitled to a commission with regard to butter received for sale from co-operative associations non-members of the Union.

In 1910 the Union opened an office in Berlin for the sale of butter in

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Germany, but owing to unfavorable market conditions, this office was soon closed.

In 1912 the Union and Messrs. L. & Co. together, founded a company in London with limited liability, which was known as "The Union."

The capital of this company consisted of common and preferred stock.

The Union in Siberia undertook to sell all butter in Europe, with the exception of Russia, only through "The Union" in London. Messrs L. & Co. put their warehouses and staff at the disposal of the new company for a remuneration of 72 copeks per barrel and discontinued their own business in Siberian butter in England.

The co-operative butter factories, delivering butter to the Union's offices, received 90% of its value and the balance one and a half to two months later.

The business with "The Union" continued only for a short time—the season of 1913 and part of the year 1914—as the war made the regular delivery of butter to England an impossibility.

Previously butter had been carried by railway to Baltic ports in refrigerator-cars, which could be re-iced on the way and thus preserve butter during the summer. After the commencement of hostilities this perishable product had to be taken in ordinary cars by rail to Kotlass, there to be transferred from railway cars to river steamers and again transshiped from river steamers to sea-going steamers in Archangel.

Owing to the impossibility of working jointly, both parties decided to cancel the agreement by the end of 1916. The Union carried it out by a resolution passed by the Board in December 1916, and Messrs. L. & Co. by a letter dated December 28th, 1916. The general meeting of representatives of the co-operative associations of the Union held in March 1917, confirmed by a resolution, the cancellation of the agreement.

Sale of Butter During the War. When the war began, railway transportation of any goods, except military stores, almost completely stopped, and this provoked an acute crisis in the Siberian butter-making industry.

The receipts of butter in Siberia almost entirely stopped, prices catastrophically dropped, and the butter factories were threatened with ruin.

The Board of the Union found means of relieving the difficult situation, and by persistent efforts in Petrograd they succeeded in getting their butter accepted by the military authorities for the Russian army—a thing that had never been done before, as cream butter was not included in the bill of fare of the Russian soldier.

When the Government bought butter from the Union, the prices began to rise. At the same time, in spite of the above mentioned difficulties, the export of butter abroad still continued. However, this went on only till October, 1915, when the Government became the Union's only customer. For this purpose a special organization was formed in Omsk, which worked

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until the end of 1918, when the Government monopoly in butter was abolished.

During the whole period of the Government monopoly, the butter was sold at fixed prices.

These prices more than once were raised under the influence of a general rise in prices, due to the war and also to the catastrophical fall in the rate of exchange of the rouble, which was the result of the financial policy adopted after the revolution of 1917.

However, the raising of prices by the Government was always behind the pace of the market prices. At this time the price for cream butter was so low that in some places it was profitable to use butter as a lubricant for cart wheels.

The abolition of the Government butter monopoly, which was persistently urged by the Union for the benefit of its members, the butter producing peasants, resulted in a further rise in prices which harmonized with the prices for other commodities.

During the period when butter was taken by the Government, it became evident that the Union not only protected the interests of the peasant during the production and sale of butter, but also facilitated the improvement in the quality.

Butter was graded into three sorts by the Government. It was found that of the three classes of butter factories namely, 1—butter factories owned by the co-operative organizations, members of the Union, 2—those owned by the co-operative organizations, non-members of the Union and 3—those owned by private people, the highest percentage of first sort butter was supplied by butter factories—members of the Union of the Siberian Creamery Associations, as can be seen from the following table.

BUTTER DELIVERED TO THE GOVERNMENT

	Co-operative butter factories						Privately owned butter factories		
	Members of the Union			Non-members					
Years	Quality of butter			Quality of butter			Quality of butter		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1916	64.6%	23.8%	11.6%	58.5%	28.3%	13.2%	31.2%	30.6%	27.6%
1917	77%	18.2%	4.8%	74.6%	20.4%	5%	68.1%	21.4%	10.5%
1918	77%	18.7%	4.3%	78.8%	17.1%	4.1%	49.7%	22.7%	38.2%

Stores for Butter-Making. A very important branch of the Union's business was and is to provide butter factories with necessary supplies for butter-making—barrels or staves, salt, matting, etc.

All these stores were and are supplied by the Union not only to the co-operative butter factories which have not yet become members of the

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Union, but also to the privately owned butter factories. The value of the stores sold by the Union for each year is shown by diagram No. 4.

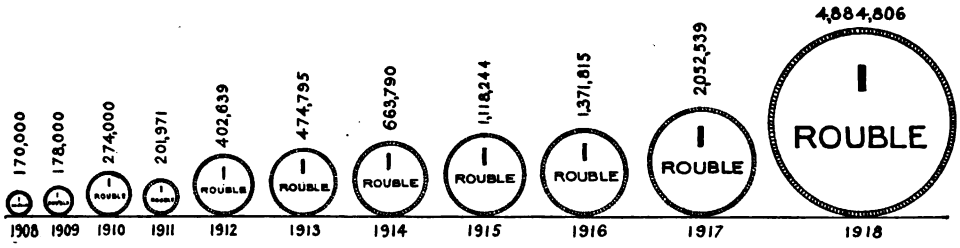

Diagram No. 4. Sales of Supplies in roubles (rouble equals 52 cents)

Stave-Making Works. When import of beech staves from abroad necessary for the export of butter to foreign markets stopped, and the beech stave making shops in Caucasus closed, the Union started its own stave factory near Kourgan, where at present staves of birch wood are manufactured on a large scale.

When it became impossible to obtain salt from European Russia, salt being essential to butter-making, the Union took steps to organize its own salterns and for this purpose rented salt lakes from the Government.

Trading. The organization of the sale of butter and the general improvement in the butter-making industry was not sufficient to satisfy the economical needs of the Siberian rural population; to supply them with divers goods was equally important.

Here we have the reason why, from the beginning, the Union was composed of butter factories, co-operative shops and stores. As they increased so also the Union's trade in goods increased, as is shown by the diagram 5.

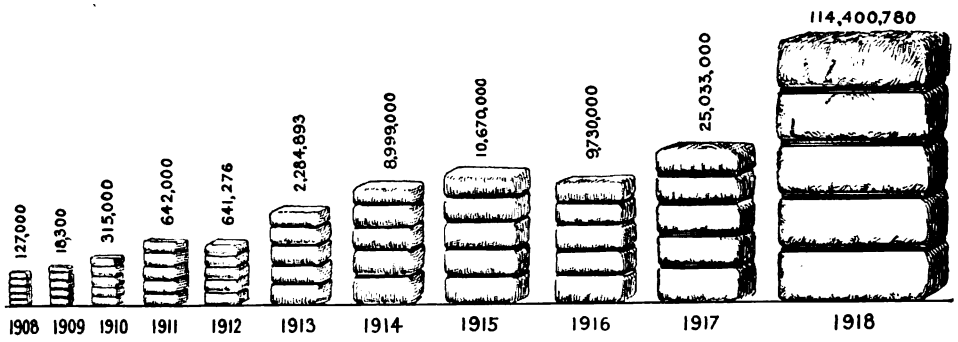

Diagram No. 5. Goods Sold by the Union (in roubles)

The development of the Union's operations in goods was at its height at the time when the needs of the population were felt to be most acute, owing to the disorganization of trade and transport. The installing on a

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firm foundation of this branch of the Union's business was executed by the late Mr. Groudzinsky, vice-president of the Union's Board, who died quite recently.

Diagram No. 5 shows that in 1917, when the famine of goods was most severe, the trading operations of the Union were almost 200 times greater than in the first year of its existence. In 1918 the total trading was 900 times more than in the first year.

To purchase goods, the Union opened at various times purchasing offices in Moscow, Samarkand, Vladivostok, Ekaterinburgh, Samara and Irkutsk. Also whenever it was possible to buy goods first hand, the Union sent special agents on this mission.

Total Sales. The growth of the general business of the Union is shown in diagram No. 6.

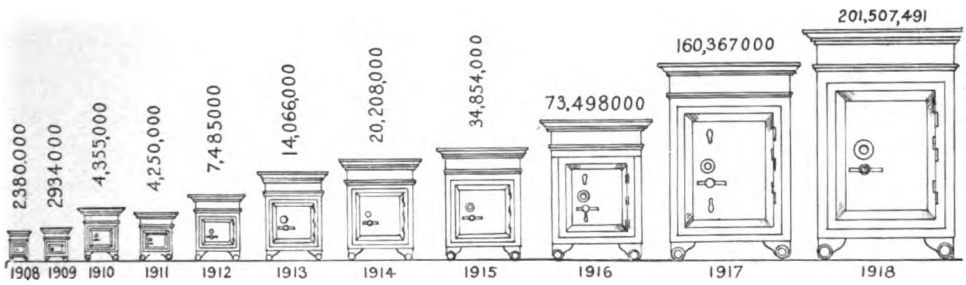

Diagram No. 6. Growth of the General Business of the Union (in roubles).

For 11 months of the last fiscal year, i. e. from October 1st, 1917 to September 1st, 1918 the total sales of the Union were as follows:

			Roubles
1	Butter		73,426,617.09
2	Cheese		100.038.43
3	Stores for butter-making		3,628,318.56
4	Goods		
	a from wholesale warehouses of the Union	101,633,477.78	
	b Bookstore	28,083.05	
	c direct from firms	6,724.24	101,688,285.07
5	Foodstuffs, pork, lard, etc		535,389.37
6	Union's own works:		
	Staves, soap, rope, vegetable oils, printing work, etc		2,113,705.05
	Total		181,473,833.77

The above statement shows the extent of the Union's operations as well as of various branches of the Union's activity and their character.

The needs of the population in various merchandise is at present aggravated by the shortage of goods and the general dislocation of trade and

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therefore the greatest attention is given to the supply of goods to the people.

The trade in butter and the supply of stores to the butter factories is at present of secondary importance, owing to the temporary decline in butter-making due to the closing of foreign markets, dislocation of transport, also the Government monopoly of butter, which has only recently been abolished, with fall in prices of this product, etc.

The Union's own manufactories, though unostentatious, are very important. Their development is now receiving the particular attention of that organization, especially in the presence of existing disorganization of industry, trade and transportation.

Union's Own Works. At present the Union of the Siberian Creamery and other Co-operative Associations has its own works as follows:

1. Soap making works in the city of Kourgan in the Union's own buildings.

The output of this works is about 30,000 poods or 10,000 cwts. of soap per year.

2. Soap making factory in the town of Barnaul in the Union's own building, producing about 10,000 poods (3,300 cwts) of soap annually.

3. Soap making works in the town of Semipalatinsk, in a hired building, producing 18,000 poods or 6,000 cwts of soap annually.

4. Stave making works, 50 versts from Kourgan, in its own building, valued with equipment at over Rbls. 1,000,000. The works is equipped with two steam motors of 100 H. P. and 30 H. P., and is provided with wood, necessary for stave making, sufficient for 10 years ahead, under an agreement with the Government.

5. Vegetable oil mills in the town of Ishim, in the Union own buildings, fitted with two hydraulic presses and a steam motor of 15 H. P.

6. Mechanical works and foundry in Ishim in the Union's own building. This works specializes in casting and repairing parts for agricultural machinery.

7. Rope making works in Yalutorovsk in the Union's own building, with an output of about Rbls. 200,000.

8. Printing works in Kourgan, with three large printing machines.

9. Printing works in Barnaul, with three large printing machines.

The Purchase of Wool, Horse-hair, Bristles, etc. To cater more fully to the interests of its members the Union recently commenced to deal in sheep wool, camel and horse-hair, skins, hides, bristles, furs, and flax, conducting this business all over the district of the Siberian butter-making and even in the adjacent steppes beyond the Southern boundary of the district and also in Mongolia. For the purchase of raw materials an office was opend in Semipalatinsk, in charge of some of the most competent men in Russia,

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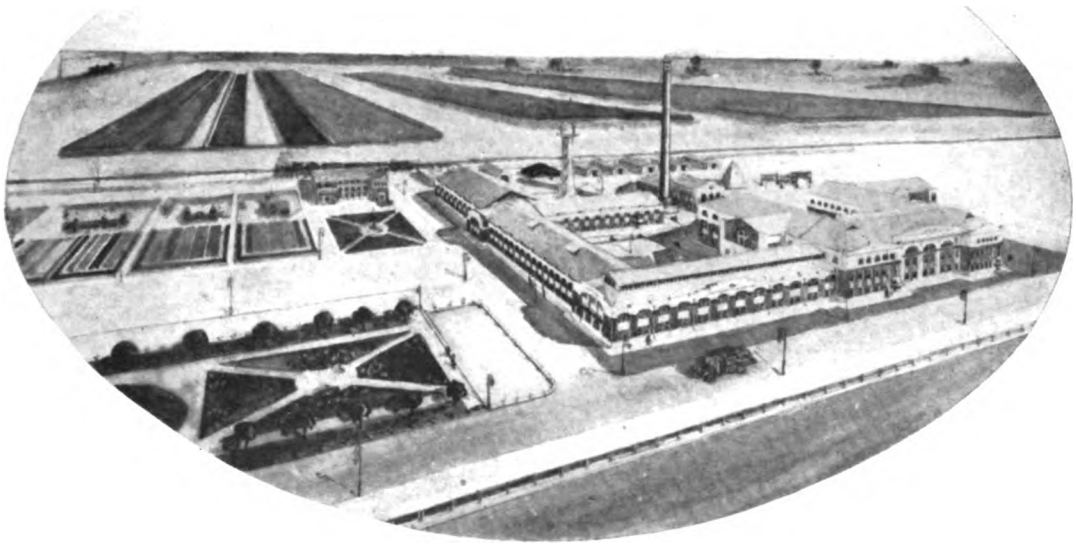
and special agents were appointed in certain trading centers. The erection of a steam wool scouring establishment in the town of Semipalatinsk, the first of its kind in Siberia, a large leather tanning works in Omsk and a central warehouse for sorting and scouring bristles and horse-hair have been undertaken.



Tannery of the Union, Omsk

Working Capital of the Union. The working capital of the Union of the Siberian Creamery Associations increased slowly owing to the policy adopted. This policy was to arrange the business in such a manner that its members should receive as much as possible for delivered butter and pay as little as possible for the purchased goods. Following this policy, the Union tried to avoid any considerable transfer to the working capital. The gradual increase of the Union's capital is shown in the following table:

Years	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Union's capital in thousand roubles	21	24	34	59	77	239	217	282	469	3000	4104

Comparison of these figures with the figures of the Union's trading show that the Union must necessarily transact a large business with small funds. This is possible provided only the commercial side of the business is well organized and also provided the concern enjoys confidence and credit.

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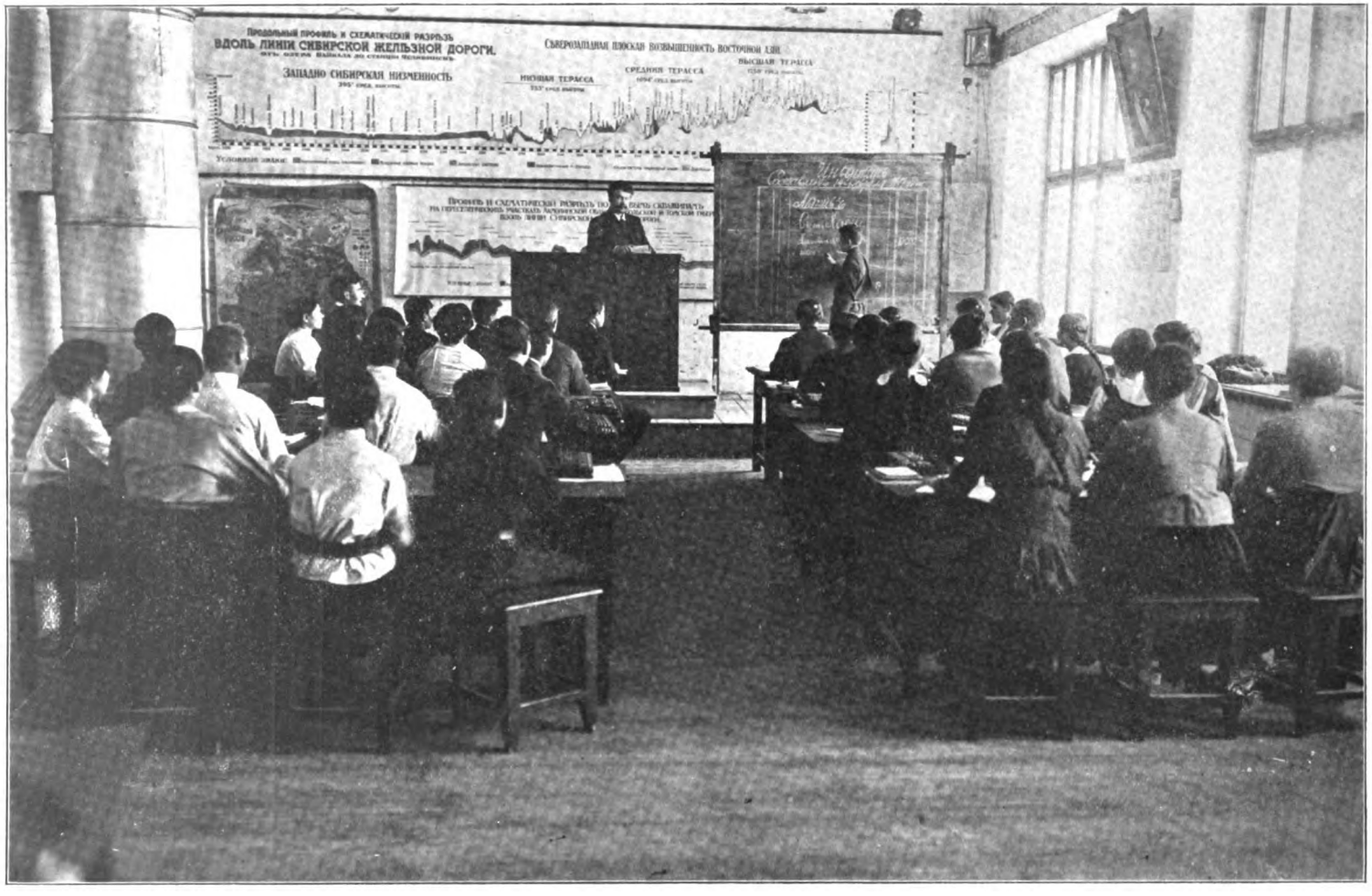

Class of Accounting Organized by the Union of the Siberian Creamery Associations

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The Statement of Affairs. The conditions of the Union's business and also its character, can best be seen from the statement of affairs of the Union on 1st Sept. 1918.

THE STATEMENT OF AFFAIRS ON 1ST. SEPT., 1918

Liabilities	Roubles	Assets	Roubles
1 Working capital	4,104,850.94	1 Cash, current accounts, securities	16,869,979.32
2 Bills payable	2,432,258.21	2 Bills receivable	16,253,518.23
3 Branches a/cs	32,551,813.03	3 Sundry property	1,735,198.52
4 Creditors	97,471,738.11	4 Stores, butter, cheese, merchandise	27,770,686.61
5 Interest	18,614,320.21	5 Branches accounts	35,714,016.33
		6 Debtors	49,786,010.45
		7 Trade expenses	7,045,571.04
Total	155,174,980.50		155,174,980.50

Creditability of the Union. Conspicuous among the assets of the Union is the largest item "Debtors"—Rbls. 49,786,010.45.

"The Union" being a union of co-operative associations transacts business exclusively with co-operative associations and not with individual members of an association. Therefore the Union of the Siberian Creamery Associations' debtors are butter-making associations as well as co-operative stores.

As on September 1, 1918, the Union comprised 3795 co-operative associations, the average indebtedness of each association, to the Union was Rbls. 13,000.

The whole indebtedness is secured by acceptances of the co-operative associations. According to the charters of the associations which are members of the Union (butter-making associations, co-operative stores, and co-operative store and butter-making associations), the acceptances of a butter-making association are secured not only by the real and movable property and funds of the association, but also by the property of its members to the extent of 50% of its value.

As to the co-operative store, and the co-operative store and butter-making associations, whose indebtedness to the Union, owing to the character of their business, is larger, their acceptances are secured by the property and funds of the association, and in addition to this, by the property of its members, on their mutual responsibility, to the extent of 90% of the value of the property.

Taking the average number of members in a co-operative association as 150 and the value of each member's property at Rbls. 4,000 in gold, which is at present far below the actual value, we find that with 1,883 associations and 1,912 stores, which were members of the Union on the 1st January

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1919, the security of acceptances of the co-operative butter-making associations, members of the Union, reaches Rbls. 565,900,000 in gold and that of the co-operative stores Rbls. 676,080,000 in gold. **Thus the acceptances, drawn by the Union's Board on the co-operative associations, members of the Union, in payment for the goods and stores sold by the Union, are secured by the property of its members to the enormous amount of Rbls. 1,240,980,000 in gold.**

Therefore the item "debtors" for Rbls. 49,786,010.45 is only about 1/25 of the amount for which the members of the Union are good, and on which the Board of the Union can safely draw bills.

Two items are worth mentioning in the Liabilities column: "Working capital" of Rbls. 4,104,850 (the reason of this small item has already been explained) and "Creditors"—that is the indebtedness of the Union to private banks, manufacturers and wholesale houses,—which reaches Rbls. 97,471,738.11, being 23 times larger than the working capital.

This indicates the confidence which the Union inspires in the trading community after its eleven years' business activity. Besides private banks, private firms and the Moscow People's bank, the Union enjoyed the confidence of the late Ministry of Agriculture.

At the beginning of the war, the Stores Department of the Ministry of Agriculture alloted to the Union the tremendous task of providing hay, butter and tallow for the army and of purchasing oats for the agricultural warehouse of the Colonization Department, with which to supply the army.

This task was well carried out by the Union, and during the first year 8,000,000 poods of hay, 700,000 poods of butter, 1,500,000 poods of oats and a considerable amount of tallow were bought up and delivered.

The delivery of butter by the Union was carried on until quite recently, and the Union more than once received advance payments up to Rbls. 1,000,000 in gold. In the same way the Union justified the trust of the State Bank, which at the commencement of the war advanced to the Union against butter as security, about Rbls. 1,000,000 in gold, which loan has since been duly repaid.

The high credit of the Union besides the above mentioned reason—the ample security provided by the co-operative associations, members of the Union, for their indebtedness to that organization—is justified by other causes.

For instance, the Union's liability, as per article 4 of the Union's charter, is secured not only by all funds and property of the Union, but also by liability of each of the co-operative associations, members of the Union, to the extent of 4% of the total funds, involved in the dealings of the member with the Union for the preceding year.

In 1917, the last year for which the exact figures are available, the Union received from its members, co-operative associations, 957,312 poods of butter at an average price of Rbls. 49 per pood, that is to say to the total of Rbls. 47,000,000, and the Union sold to its members, various

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stores and goods in connection with butter-making for the total of Rbls. 2,049,000, and general merchandise for Rbls. 25,633,000.

Thus the total funds involved in the transactions between the Union and its members reach about Rbls. 75,000,000, (Rbls. 47,000,000 + Rbls. 2,049,000 + Rbls. 25,633,000) and therefore the liability of the members for the Union's debts and obligations reaches Rbls. 3,000,000.

For the year 1918, the complete figures for which are not yet available, the liability of the Union's members will be still larger, as only transactions of the Union with the co-operative stores, excluding dealings in butter and foodstuffs, reach Rbls. 100,000,000 for 11 months of the fiscal year, which results in the liability of the members to the extent of Rbls. 4,000,000. It is safe to assume that in proportion to the total funds involved in the dealings of the Union with its members for 1918, the liability of the latter with regard to the Union's liability will be not less than Rbls. 5,000,000, which, together with the value of the Union's property on the 1st, September 1918, Rbls. 1,735,578, the funds of the Union—Rbls. 4,104,850, brings the total security that the Union can offer in regard to the obligations of its Board, excluding the acceptances of the co-operative associations, to more than Rbls. 10,000,000.

But perhaps the best guarantee is in the organization of the Union itself, which has all the features of a well organized and fully controlled business machine.

The Union possesses a well developed apparatus, consisting of a Board, 25 district branches, 10 agencies and several purchasing offices.

In every establishment of the Union, several hundred employees are working under the best possible conditions.

The Central Board of the Union directs the whole business, and controls the Boards of the district branches.

Twenty-five district offices under the direction of the elected chairman and members of the District Board, have charge of the receiving of butter, of buying and distributing stores and goods. To assist the district offices there are in some of the busiest districts, agencies, at present numbering ten.

Purchasing offices are established when necessary at the points where goods are purchased. These offices are in the following towns: Moscow, Samara, Ekaterinburgh, Samarkand, Irkutsk, Kharbin and Vladivostok. There are also offices in London, New York and Boston for sale of butter, wool, horse-hair, flax, furs, bristles, hides and skins and for the purchase of fully manufactured goods.

This great organization is manned on the principles of election and is under an actual and efficient supervision.

By-Laws of the Union. Until October 25th, 1918 the Union acted by virtue of by-laws, approved in 1908. Since then the Union has grown so much and its business has become so complicated that the old by-laws were

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Members of the General Meeting of the Union, 1918, Kourgan

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found insufficient for the growing needs of the business, and accordingly alterations were made from time to time. The resolution of the general meeting held 4—13th of March 1917 was, that an entirely new set of by-laws should be compiled, which would be in keeping with new times and requirements of the business as well as with the newly promulgated state law referring to co-operative movement.

General Meeting. According to the new by-laws, the supreme power in the Union is vested in the General Meeting of the representatives, who are elected by district meetings from among the members of co-operative associations concerned, at the rate of one person for each 25 associations, members of the Union. The Union comprising on the 1st April 1919, 4357 co-operative associations, the General meeting consists of 174 members. In practice the representatives, elected to the General meeting, are exclusively peasants-agriculturists and Cossacks, and therefore the Union of the Siberian Creamery Association is purely a democratic, peasant organization. The whole business has been and is conducted by representatives of the peasantry and Cossacks, with only a few exceptions in the case of persons, who, not being of the peasant class, have gained the trust and confidence of the peasants-agriculturists by their work for the benefit of the Union. This composition is reflected in the whole activity of the Union, which is stamped by the cautious circumspection and quiet business methods so peculiar to the Siberian peasant. This is the main reason for the enormous growth and thriving of the Union.

The General meeting is presided over by a chairman, elected by the meeting, which guarantees complete independence of his opinion from the Board of the Union.

Board of Directors of the Union. The Board of Directors of the Union and also chairmen of all District Boards are elected by the General Meeting. General Meeting investigates the annual report of the Union, the reports of the District Boards, together with the conclusions of the Auditing Committee, approves the estimate of expenses and decides the more important matters. For investigation and decision on matters for which the Board of Directors of the Union cannot undertake the responsibility and which at the same time cannot await the next General Meeting there is a Council, consisting of members of the Board of the Union, chairmen of the District Boards and persons especially elected for this purpose, by each district.

The Board of Directors of the Union consists of 10 persons, elected by the General Meeting, has its seat in Omsk, manages the whole business of the Union and directs and unifies the activities of the District Boards.

Management of Districts. All work in connection with the buying of butter in the districts, distribution of goods, and instruction of butter factories and co-operative stores is in charge of the District Boards. The

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Convention of the Instructors in Dairying of the Union of the Siberian Creamery Associations, Kourgan.

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decision of all important questions and election of the members of the Union's Board for each district is in the hands of the district meetings of representatives of all co-operative associations of the district. These meetings are effective only when at least one half of the representatives of the whole district are present. They are presided over by a person specially elected by the meeting in order to obtain judgments that are independent of the District Board.

For decisions on matters of less importance, each district has a Council consisting of members of the District Board and not less than 1/5 representatives of all co-operative associations in the district. The District Board which conducts the affairs of the district consists of a chairman, elected at a General Meeting and members, elected at the meeting of the district.

Auditing Committee. An Auditing Committee is installed to check the activities of the District and Central Boards and all establishments and enterprises of the Union. This Committee is entirely independent from the Central Board and also from the District Boards. The chairman and vice-chairman of the Auditing Committee are elected by the General Meeting and the members of the district meetings.

The Auditing Committee is entitled to work simultaneously in several places. This is done by forming sub-committees also called Auditing Committees, under the leadership of one of the vice-chairmen. This arrangement assures the success of the Committee's work, which is very difficult owing to the complex nature of the Union's business.

The Union has a staff of instructors to organize new co-operative associations and instruct butter-making foremen, managers and assistant managers of the co-operative stores. These instructors work under the leadership of the Director of the Instructors' Section in each district. To coordinate the activities of all instructors the Central Board of the Union arranges annual conferences of Directors of Instructors' Sections of all districts.

In the organization of the Union, according to the new by-laws, which are now effective, two seemingly opposite principles are united, namely, the independence of separate districts and the entirety of the Union. Each district in the Union is completely independent in its affairs. All districts support each other and none of them is able to conduct the business to the detriment of the whole Union. This arrangement gives freedom to the creative abilities and initiative in the districts, at the same time the Union preserve all the advantages of a powerful organization in the country

Other unions of co-operative associations in European Russia and Siberia are founded on somewhat different principles.

The Central Board of the Union and its Departments. At present, the Central Board of the Union of the Siberian Creamery Associations is a

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large establishment of ten elected members and over 200 hired employees, who execute most diversified work. There are several departments, each in charge of a separate branch of the Union's business. Thus the Butter Department finds the most profitable markets for butter, attends to transportation arrangements, looks after the interests of the trade and the Union's members in the Government institutions, promotes improvements in the technique of butter-making, attends to the coaching of foremen for the butter factories, supplies creameries and butter factories with various necessary articles, cans, bins, machines and other ware, promotes improvement of the premises for butter factories, watches over production of butter, promotes cheese making, etc.

The Union accomplished great work in trying to improve the transportation of butter over railways during the summer months, when butter easily perished because of heat, urging increase in the number of refrigerator-cars, better stocking of cars with ice and the better guarding of butter-conveying-trains on the way.

The Goods Department aims at purchasing goods at the place of their origin, distributing goods amongst the Union's offices, and arranging for the delivery and transportation of same.

The Goods Department comprises Transportation, Bookkeeping, Statistics and Enquiries, Purchasing, and Tracing sections, the last named for locating freight and assisting its speedy transportation.

The Main Bookkeeping section of the Union has charge of all accounts and reports of the Union—monthly and annually—with regard to the administration of the Union and to the Government Institutions, it compiles instructions for keeping books and accounts, in all establishments of the Union and prepares the estimate of expenses for the coming year.

The Bookkeeping Department has an Inspection section, which inspects and instructs the District Boards regarding bookkeeping; a special section, "Central Board's Accounts," has charge of all accounts and settlements with branch offices and the Union's concerns, with other trading houses and institutions, takes care of credit arrangements and accounts of the Central Board itself.

The Secretarial Department has charge of all current correspondence and filing.

The Insurance Department attends to the insurance of the property of the Union's Board and also separate co-operative organizations, members of the Union.

The Information Department advises, at regular intervals, all departments of the Central Board as well as the Districts Boards, of all important happenings in the Union.

The Department of Economical Statistics collects numerical data with reference to various sides of the Union's life, arranges it in accessible and comprehensible forms and works out the averages for guidance. This department also periodically advises the Central Board, on the strength

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of the statistical data, of the position of divers sides of the Union's business in all districts.

The Industrial Department has charge of all manufactories of the Union.

The Educational Department establishes schools, scholarships for members' children, organizes reading clubs, libraries, etc.

The Agricultural Department disseminates agricultural instruction among the members of the Union, mainly with regard to stock raising, which has the closest relationship to the main business of the Union, that of butter-making.

The Union opened a school of accounting and instruction in merchandise in Kourgan, established many scholarships in various schools, has two publications "Narodnaia Gazeta" ("People's newspaper") in Kourgan and "Krestianin—Sibiriak" ("Siberian Peasant") in Barnaul, publishes in Boston a bi-monthly "Review of Foreign Markets" in Russian, publishes books, organizes libraries, opened a Museum of Applied Science in Omsk, etc.

According to the new by-laws the Union is entitled to receive money on deposit from its members and pay interest thereon. For the members of the Union this is a convenient and profitable placement of their savings and for the Union it is a means of increasing the working capital and facilitating transactions.

The Siberian Agricultural Bank. Large financial operations of the Union, particularly in connection with savings, deposited with the Union not only by the members of the Union, but also by outsiders, also the fast growing export of agricultural products to America and Europe—all this brought the Union to the realization of the necessity to establish their own bank. The organization of such a bank under the name of "The Siberian Agricultural Bank" has been completed and the bank will soon commence its operations. This bank will have its Board in Omsk, branches in Novo-Nikolaevsk, Barnaul, Semipalatinsk and Kourgan and agencies attached to the majority of District offices of the Union of the Siberian Creamery and other Co-operative Associations.

Summary. It follows from the above that:

1. The Union of the Siberian Creamery Associations aims to satisfy the most pressing daily needs of the population of a large country.

2. About 42% of the whole peasant and cossack population of the Eastern Urals foreland, of Western Siberia and of the Steppe region avail themselves of the Union's services and are interested in the Union's success.

3. The activity of the Union is highly appreciated by the population, as is proved by the rapid and continuous growth of the Union.

4. The activity of the Union is highly appreciated by the Government, which has often entrusted large and responsible tasks to this organization.

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This year (1919) the Union supplied the Government with 1,800,000 poods of butter.

5. At present the Union of the Siberian Creamery Associations is one of the largest co-operative organizations in Russia.

6. The credit of the Union rests on broad and firm foundations and is absolutely unquestionable.

7. Owing to its organization, the Union is capable of the broadest development of its business, while the size and wealth of the territory where the Union works, present all facilities for such development.

8. The proper conduct of the Union's business is guaranteed by the broad and consistent application of the elective principle and by the high standing of the auditing and controlling apparatus of the Union of the Siberian Creamery and other Co-operative Associations.

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Union of the Siberian Creamery

AND OTHER

Co-Operative Associations

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CONTENTS

	PAGE
Preface	5
Index of Charts	6
Table of Measures	6
Organization	7
The Siberian Butter-Making District	7
The Boundaries of the Butter-Making District	7
Administrative Composition of the Butter-Making District	8
The Dimensions of the Distrct of Siberian Butter-Making	9
Configuration of the Land	9
Geological Aspect of the District	9
Mineral Wealth	11
Mineral Waters	12
Soils	12
Climate	14
Amount of Precipitation	15
Irrigation	16
Rivers	16
Lakes	17
Vegetation	19
Animals	22
The Natural Wealth of the District	25
Insufficient Development of Natural Resources	25
Population	25
Density of Population	25
Distribution of Population	26
Possibilities for Future Growth of Population	26
Ethnographic Composition of the District	27
Kirghyz	27
Bashkirs	27
The Altai Tribes and Tartars	27
Russians	27
Emigrants	31
Cossacks	31
Means of Communication	32
Navigable Rivers	32
The Northern Route	33
Railroads	33
Unmade Roads	34
Main Occupation of the Population	34
Cultivated Area	34
Plants Cultivated	35
The Methods of Agriculture	35
Obstacles to Improve Methods of Agriculture	37
Communal Land Ownership	37
Measures to Improve the Technique of Agriculture	37
Fertility	37
Causes Affecting the Crops	38
Quantities of Agricultural Products	38

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PAGE

Export of Agricultural Products 38
Stock Raising 39
Unfavorable Conditions for Stock Raising 41
The Kirghyz Method of Stock Raising 41
Russian Stock Raising 41
Siberian Livestock 42
Sheep Breeding and its Future 42
Stock Raising in Figures 43
Measures to Improve Stock Raising 45
Export of Products of Stock Raising 45
Export of Hides, Wool, Hair and Bristles 46
Mining Industry 46
Manufacturing Industry 46
Domestic Industries 47
Milling Industry 47
Distilling and Brewing 47
Butter-Making 47
Manufacture of Melted Butter previous to the Construction of the Siberian Railway 48
First Experiments in Making Cream Butter 48
Butter-Making and the Railway 49
Siberian Butter 49
Growth of Butter-Making 49
Organization of Butter-Making by Private Persons 50
Faults of the New Business 50
Government's Attitude Towards Butter-Making 51
A. N. Balakshin 51
The Attempt to Eliminate Foreign Exporters 53
Special Organization to Introduce the Co-operative Principles in the Butter-Making Trade 53
Results of the Organization's Work 54
Unionization of Co-operative Butter Factories 54
Founders' First Meeting 55
Aims of the Union 55
Peculiarities of the Union's Charter 55
Speedy Growth of the Union 56
Increasing Number of Co-operative Associations in the Union . . 56
Increase in the Number of Branches 57
The Wholesale Stores 58
Amount of Butter Received by the Union 58
Sale of Butter Abroad 59
Sale of Butter During the War 60
Stores for Butter-Making 61
Stave Making Works 62
Trading 62
Total Sales 63
Union's Own Works 64
The Purchase of Wool, Horse Hair, Bristles, etc 64
Working Capital of the Union 65
The Statement of Affairs 67
Creditability of the Union 67
By-Laws of the Union 69
General Meeting 71

Digitized by Google

PAGE

Board of Directors of the Union 71
Management of Districts 71
Auditing Committee 73
The Central Board of the Union and Its Departments . . . 73
The Siberian Agricultural Bank 75
Summary 75

INDEX OF ILLUSTRATIONS

Officers of the Union 2
Mountain Belukha, Altai 10
Rocks on Lake Borovoe 18
Lake Moultinskoe, Central Altai 18
Horse of Altai Tribe 28
Village Kamen, Populated by the "Old Timers," in the Government of Tomsk 30
River Obi near town of Barnaul 32
Creamery of the Souskanikhin Co-operative Association (Government of Altai) member of the Union 34
Liubinsky Prospect in Omsk 36
Creamery of the Staro-Barda Co-operative Association (Government of Altai) member of the Union 39
Petropavlovsk, Government of Akmolinsk 44
Semipalatinsk 40
Central Dairying Laboratory in Tomsk 51
A. N. Balakshin, Founder of the Union 52
Diagram No. 1—Growth of Creamery Associations in the Union . 56
Diagram No. 2—Growth of Distributing Stores of the Union . . 57
Diagram No. 3—Receipts of Butter by the Union 59
Diagram No. 4—Sales of Supplies by the Union 62
Diagram No. 5—Goods sold by the Union 62
Diagram No. 6—Growth of the General Business of the Union . . 63
Tannery of the Union, Omsk 65
Class of Accounting Organized by the Union of the Siberian Creamery Associations in Kourgan 66
Members of the General Meeting of the Union, 1918, Kourgan . 70
Convention of the Instructors in Dairying of the Union of the Siberian Creamery Associations—Kourgan 72

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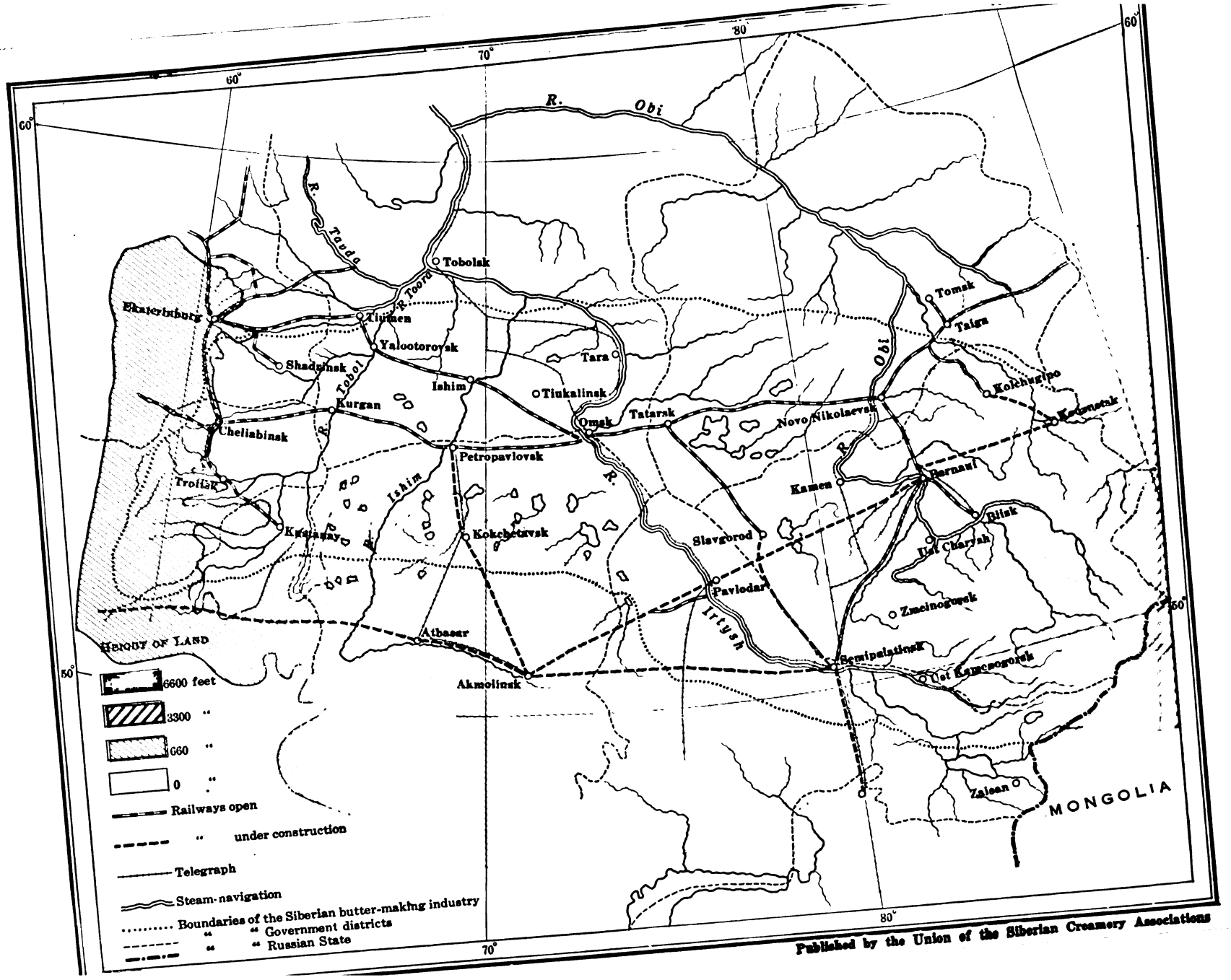

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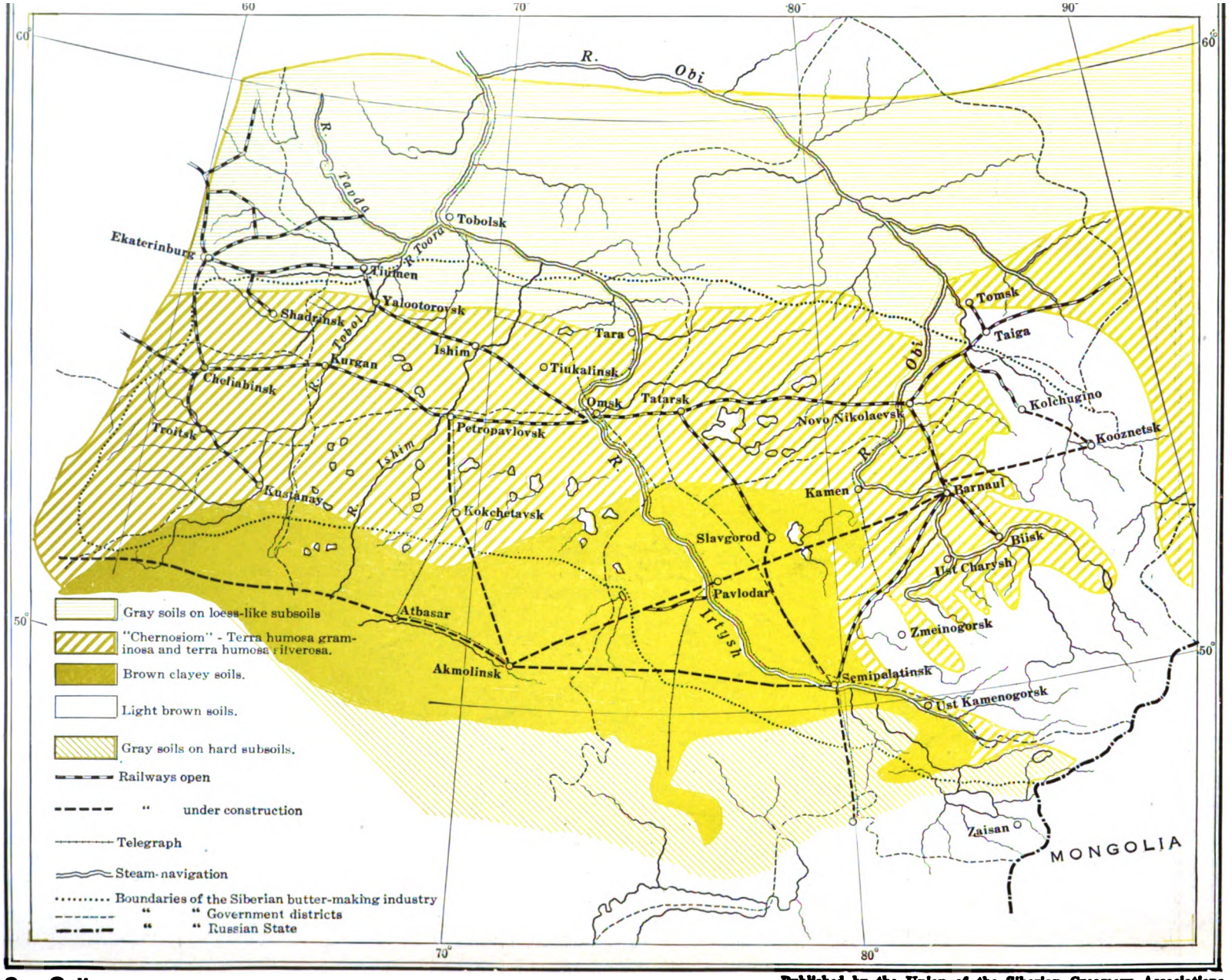

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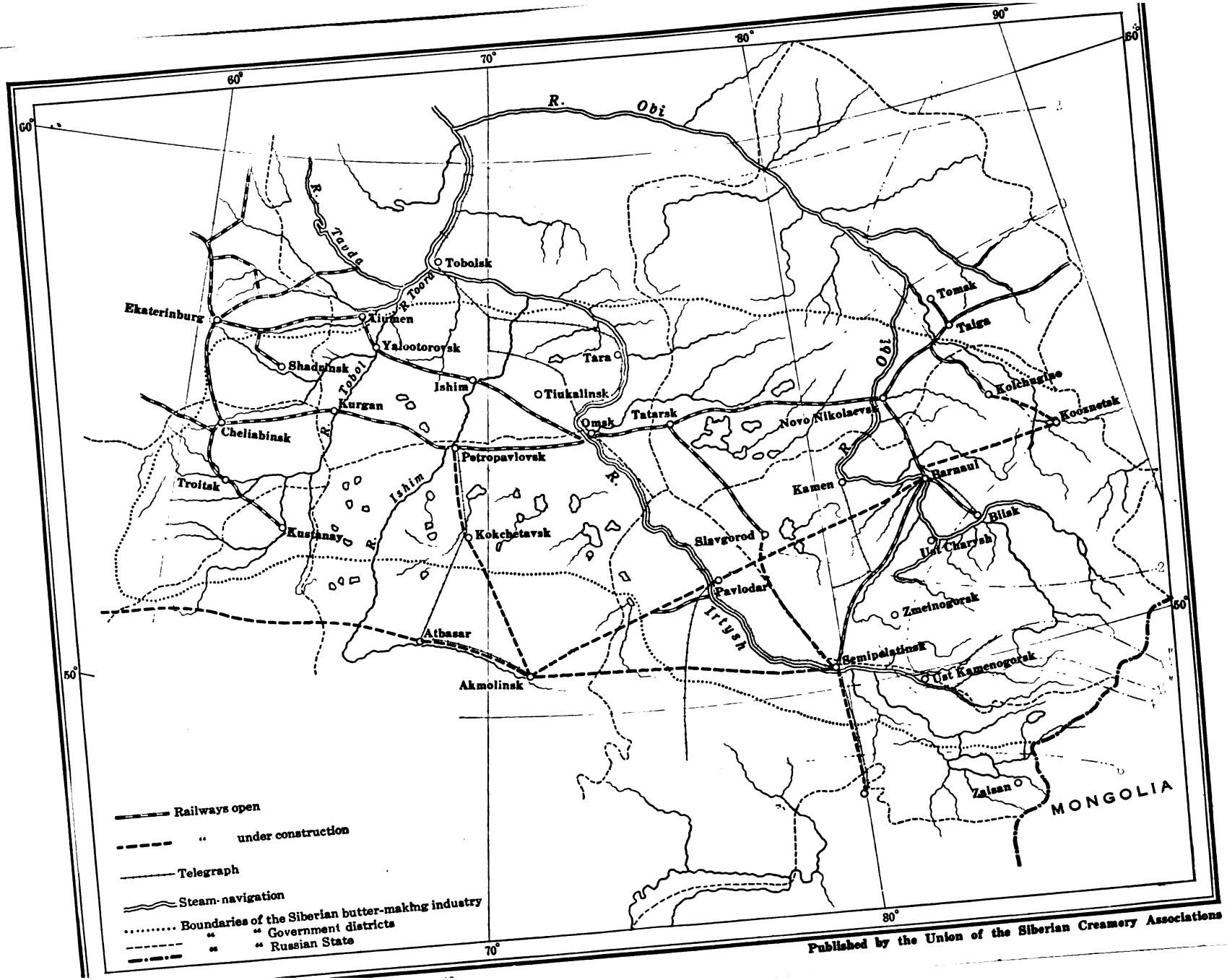

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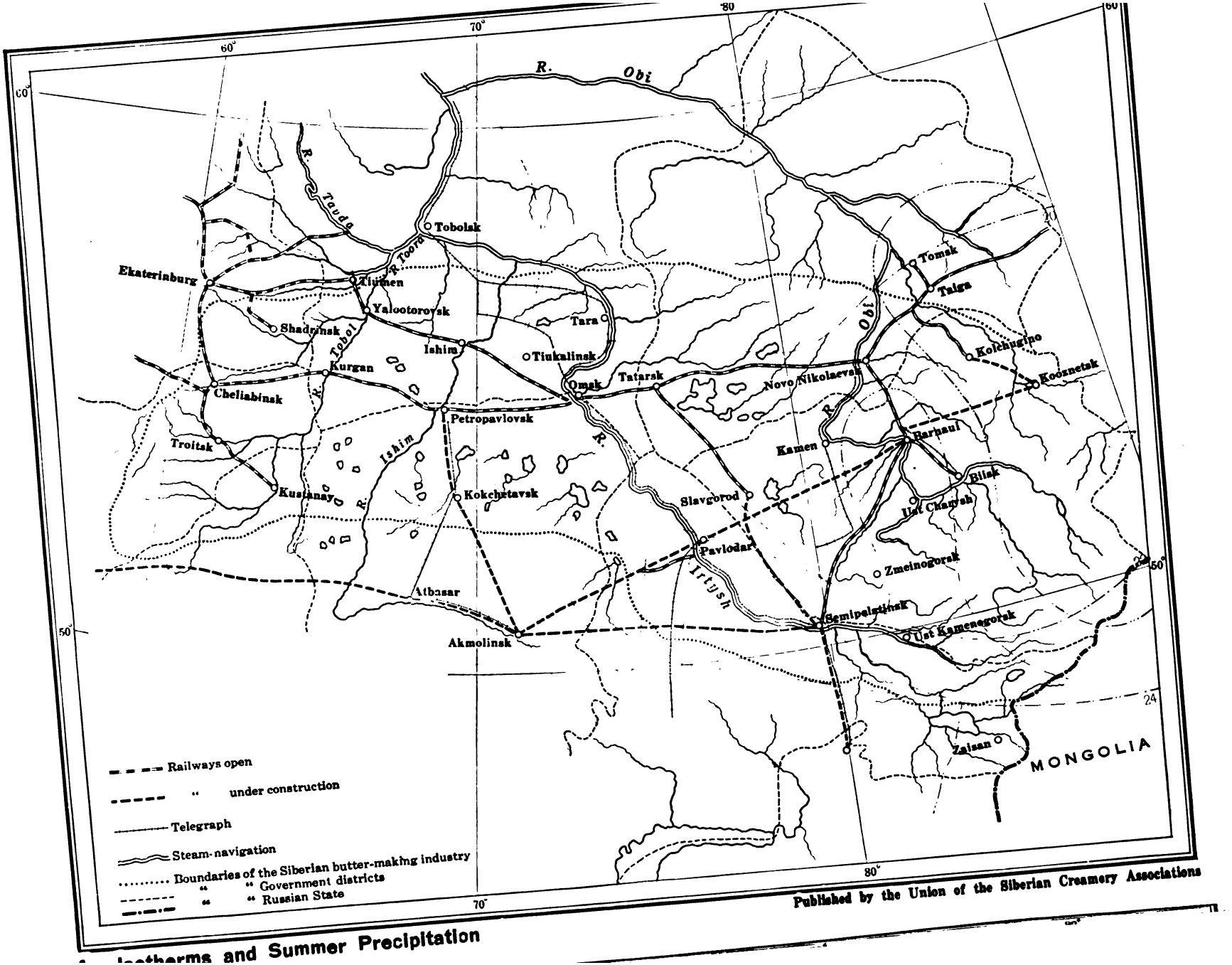

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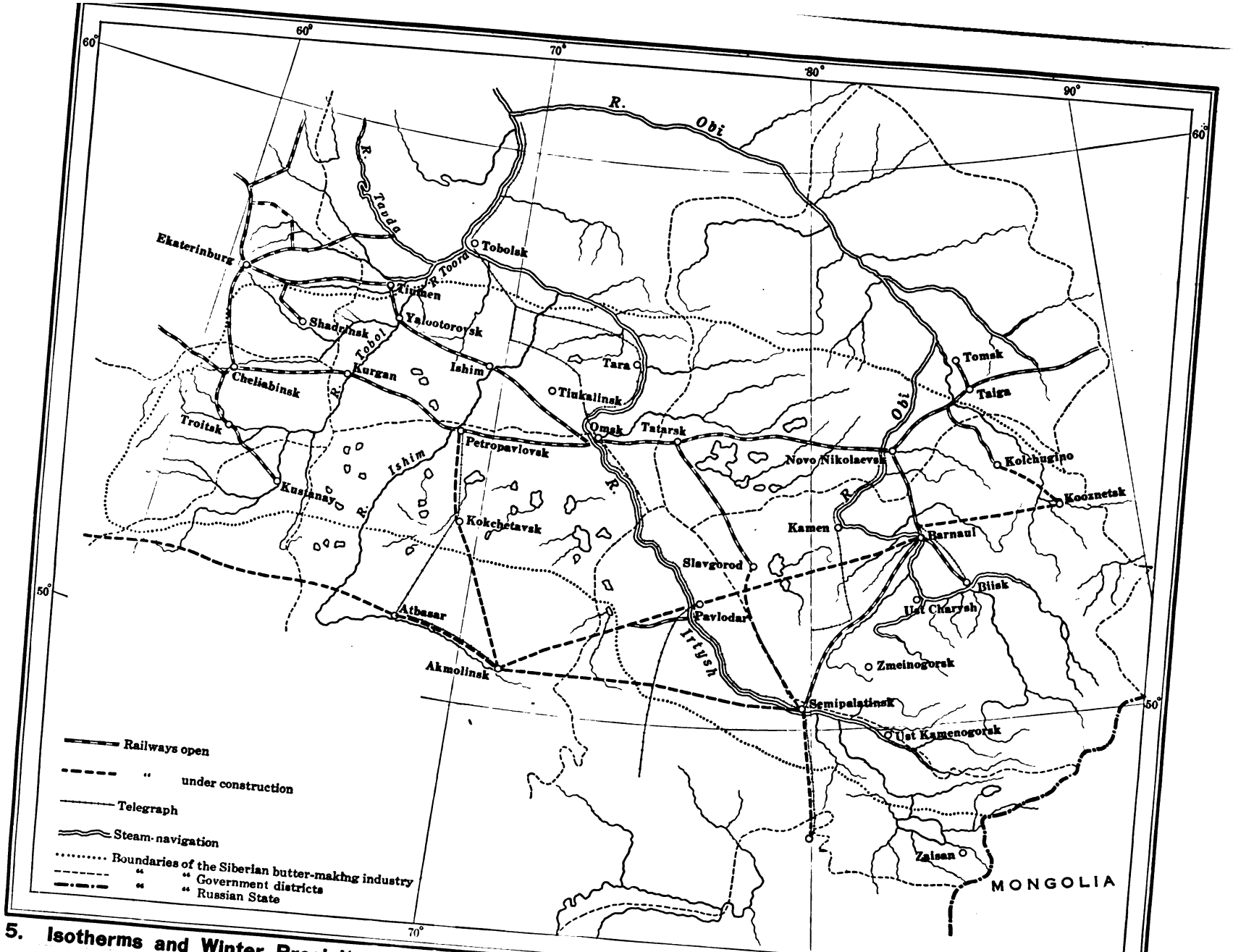

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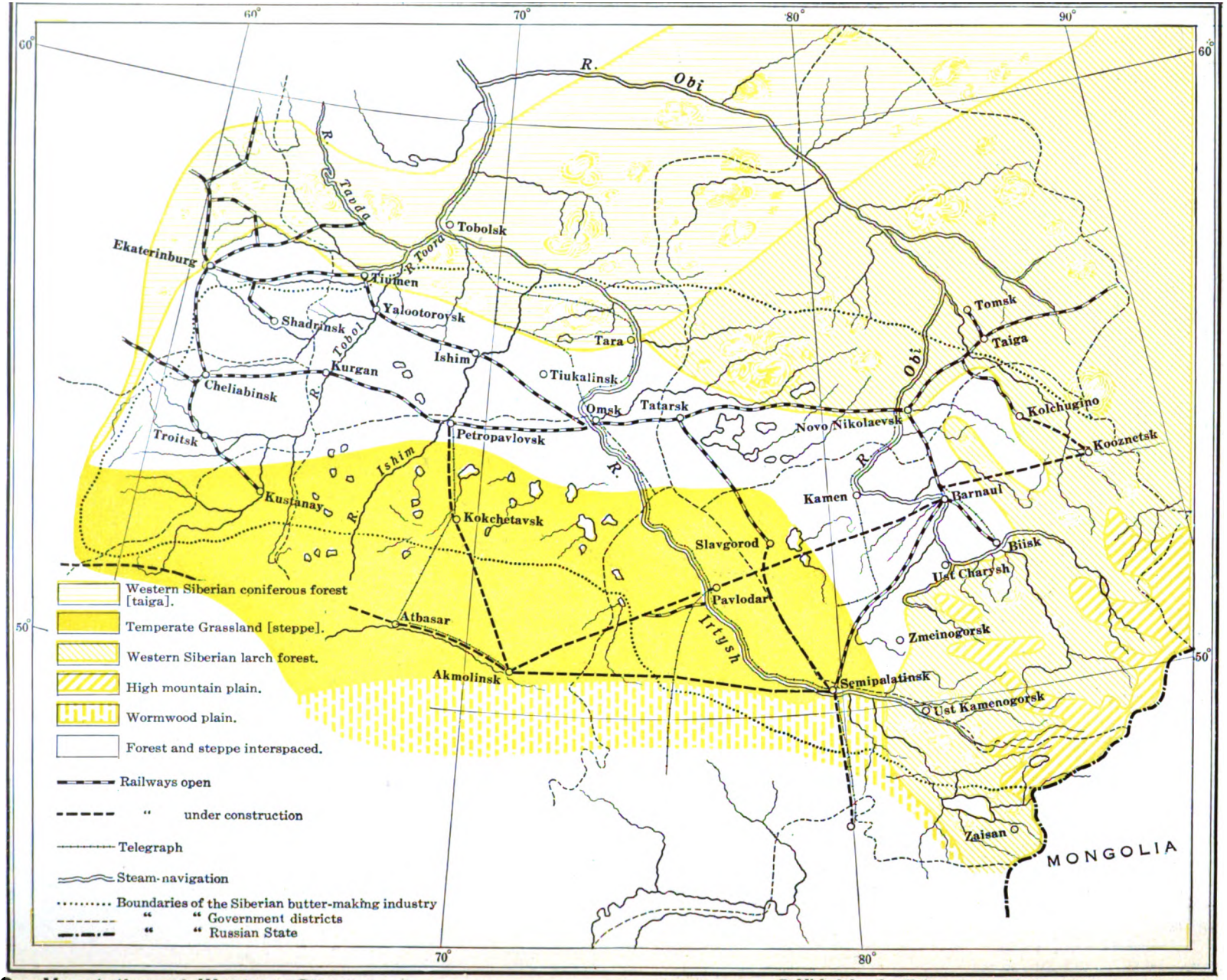

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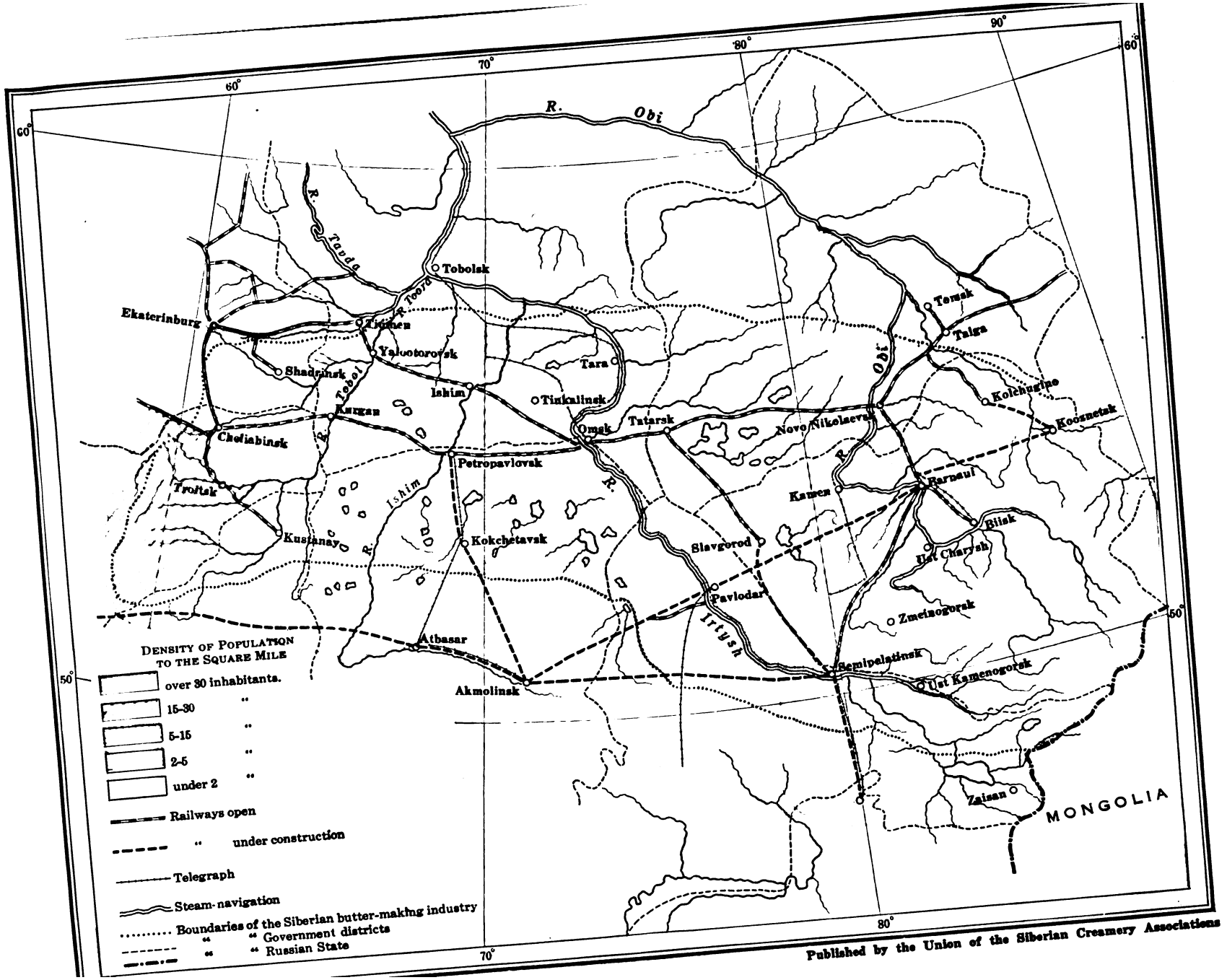

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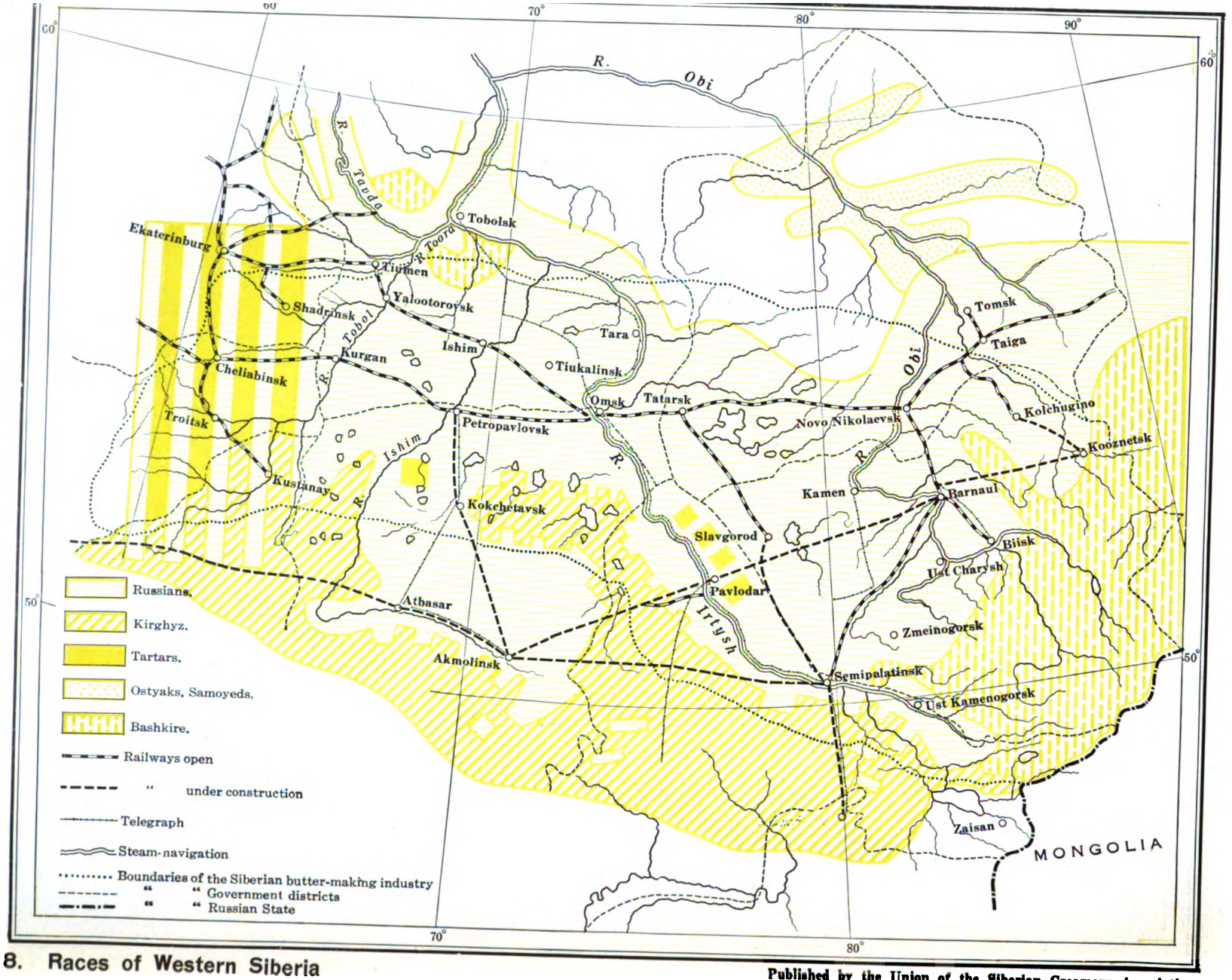

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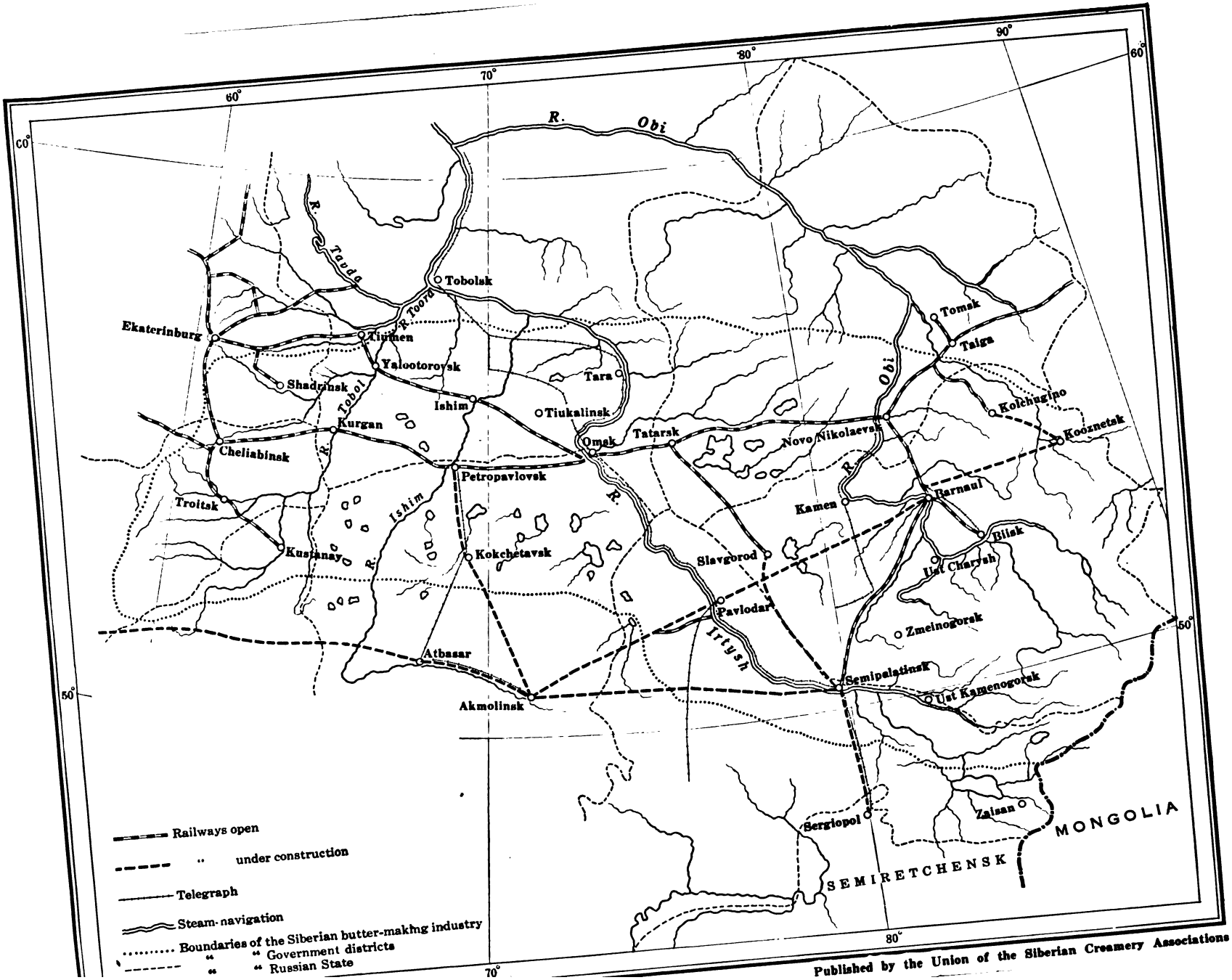

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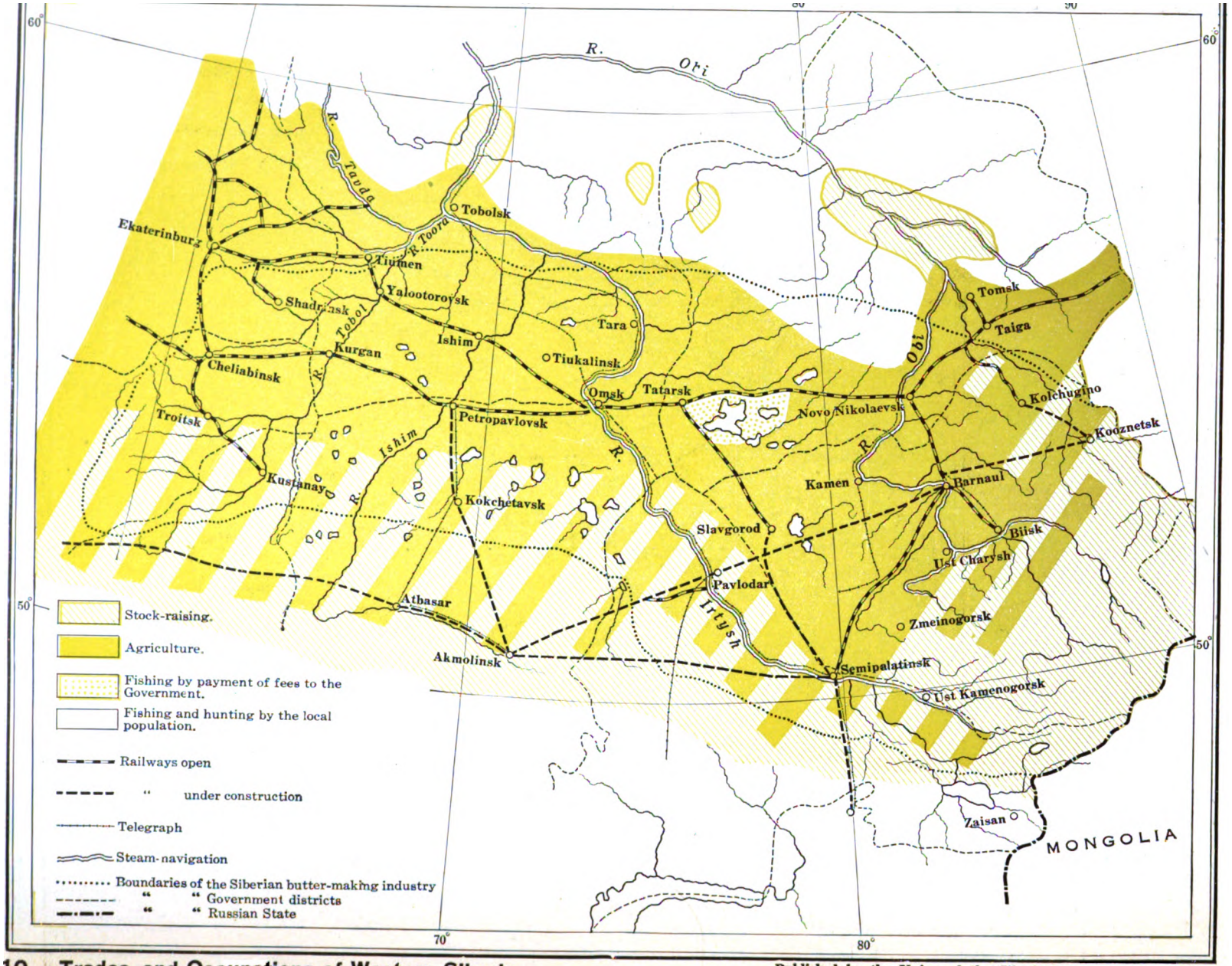

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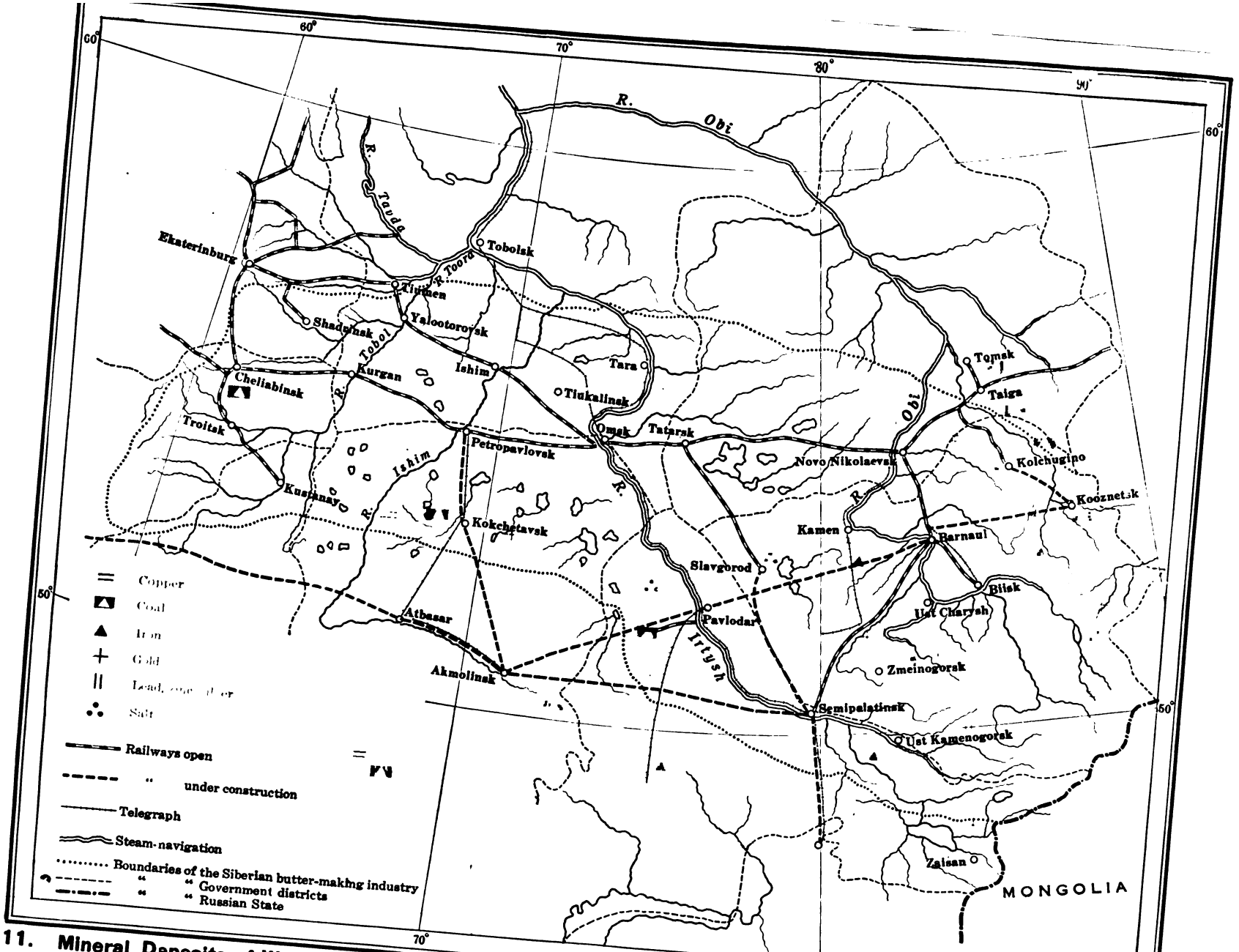

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